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PATENTS

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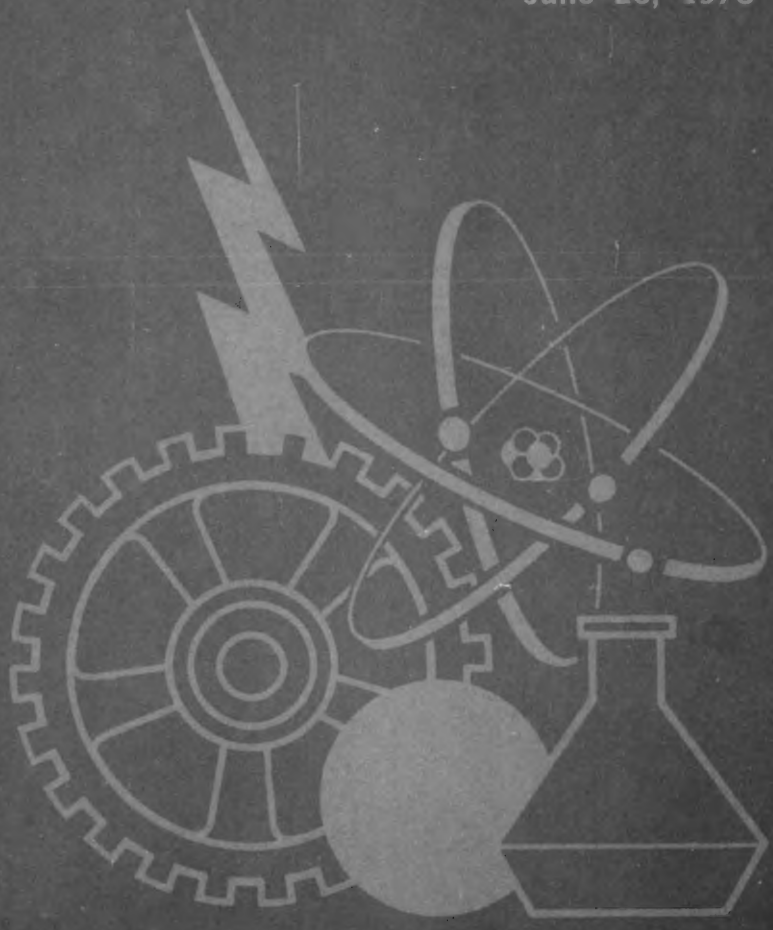

U. S. DEPARTMENT OF COMMERCE
Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE
June 26, 1973 Volume 911 Number 4

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PATENT OFFICE NOTICES

TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PARTS 2 AND 6—RULES OF PRACTICE IN TRADEMARK CASES.

International Trademark Classification

A proposal was published at 37 F.R. 6404 to revise § 6.1 of the Rules of Practice in Trademark Cases. The Patent Office proposed to establish the "International Classification of Goods and Services to Which Trademarks Are Applied" (the subject of the "Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks" of 1957, as revised at Stockholm on July 14, 1967) as the primary classification of goods and services for registration of trademarks and service marks. Pursuant to the Notice, written comments have been received, and a public hearing was held on June 14, 1972. Full consideration has been given to all matter presented, and changes in the text of the original proposal have been made in view thereof. It has been determined that adoption of the international classification system is desirable.

The Patent Office has studied the international classification and, since Mar. 5, 1968, has indicated the appropriate international class in all publications and on all issued registrations and renewals as a subsidiary classification. Based on this experience and the comments received, it is now believed that adoption of the international schedule as the primary classification system is desirable. The international system is easier to administer because of fewer classes of goods and the availability of an alphabetical listing of goods and services.

The Nice Agreement provides for an International Committee of Experts whose objective is to keep the classification current. The classification of specific goods and services is set forth in the Alphabetical List entitled "International Classification of Goods and Services to Which Trademarks Are Applied" (published by the World Intellectual Property Organization). In addition, the International Trademark Classification List contains the names of the classes setting forth the basic contents of each class. The Alphabetical List also comprises explanatory notes which serve as guidelines for determining the appropriate international class for a specific product or service.

The alphabetical listing within the International Trademark Classification Manual is currently used by the Office as a guideline for determining the degree of particularity of identification of goods. See "Identification of Goods and Services in Trademark Applications," 36 F.R. 13232; July 16, 1971.

Applications for registrations filed on or after Sept. 1, 1973, and registrations issuing thereon, will be classified according to the international classification set forth in the new § 6.1. Accordingly, the international classification is adopted under Section 30 of the Trademark Act for all purposes under the statute and rules; and, therefore, will be the criterion for determining, inter alia, fees.

Applications for the registration of marks filed on or before Aug. 31, 1973, appeals or petitions to revive or oppositions filed in connection with said applications, and affidavits, renewals and petitions for cancellation filed in connection with registrations issuing thereon, will continue to be processed under the classification system existing at the time the mark was registered.

All applications which are published and registrations which are issued will carry both the appropriate international classification and existing U.S. classification number.

An insufficient fee, in connection with an appeal or opposition on any application or in connection with an affidavit or renewal filed in connection with any registration, will not render the same unacceptable, if the proper fee is submitted within a time limit set forth in a notification of the defect, providing the proper fee for at least one class has been originally submitted within the applicable time limit. This will be the case even if the full fee is not received within the sixth year in the case of an affidavit filed under Section 8 or before the end of the twentieth year, including the grace period, in the case of renewal applications, or within the six-month statutory response period in the case of an appeal, or within the thirty-day opposition period, or any extension thereof in the case of the filing of an opposition.

The existing classification system will continue to be used for searching registered and pending marks until all documents in the search file are organized on the basis of the international system of classification. Until this changeover is effected, the U.S. class designation will continue to be printed on all published applications and registrations issued under the existing or the international classification system to facilitate searching on the basis of the existing U.S. system of classification.

Until all applications filed on or before Aug. 31, 1973, have been disposed of, the trademark sections of the OFFICIAL GAZETTE, which are organized by class, will include two sections: one for applications published or registrations issued on the basis of applications filed on or before Aug. 31, 1973, organized by class according to the U.S. schedule of classes; the other section for applications published or registrations issued on the basis of applications filed on or after Sept. 1, 1973, organized by class according to the new international schedule.

Certification marks and collective membership marks will continue to be classified as set forth in redesignated §§ 6.3 and 6.4.

Efforts will be made to have the International Trademark Classification List printed by the Government Printing Office or otherwise assure the availability of the List from local sources. Notification will appear in the OFFICIAL GAZETTE when the List is available from local sources or the Government Printing Office.

The English edition of the "International Classification of Goods and Services to Which Trademarks Are Applied" can presently be ordered from:

Sales Branch, The Patent Office, Block C
Station Square House, St. Mary Cray
Orpington, Kent, England

Certain modifications and additions to the international trademark classification have been published as supplements and are also available from the British Office. In addition, and inasmuch as the World Intellectual Property Organization (WIPO) has issued the List in several languages, it is anticipated that an English version will be published by that organization.

We have been advised by the Patent Office of the United Kingdom that the only acceptable methods of payment for the International Trademark Classification List are by International Postal Money Order or by banker's draft payable in sterling and drawn on a bank in the United Kingdom. Orders for the international classification and for the supplements can be made by remittance in the following amount(s):

International Trademark Classification		50 pence
Nov. 15, 1967, supplement		5 pence
Mar. 18, 1970, supplement		Free
Mar. 3, 1971, supplement		10 pence
Total cost (including postage by surface mail)		65 pence
Additional charge for postage by air mail	1 pound	55 pence
Total cost by airmail	2 pounds	20 pence

Effective Date.—This revision shall become effective as of Sept. 1, 1973. In consideration of the comments and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 792, 35 U.S.C. 6), as amended Oct. 5, 1971 (85 Stat. 364), and in section 30 of the Trademark Act of 1946 as amended (Oct. 9, 1962, 76 Stat. 773, 15 U.S.C. 1112), Parts 2 and 6 of Chapter I of Title 37 of the Code of Federal Regulations are hereby amended as follows:

1. Section 2.85 is revised to read as follows:

§ 2.85. *Classification Schedules*

(a) Section 6.1 of Part 6 of this chapter specifies the system of classification for goods and services which applies for all statutory purposes to trademark application filed in the

Patent Office on or after Sept. 1, 1973, and to registrations issued on the basis of such applications. It shall not apply to applications filed on or before Aug. 31, 1973, nor to registrations issued on the basis of such applications.

(b) With respect to applications filed on or before Aug. 31, 1973, and registrations issued thereon, including older registrations issued prior to that date, the classification system under which the registration was granted will govern for all statutory purposes, including, inter alia, the filing of petitions to revive, appeals, oppositions, petitions for cancellation, affidavits under Section 8 and Renewals, even though such petitions to revive, appeals, etc., are filed on or after Sept. 1, 1973.

(c) Section 6.2 of Part 6 of this chapter specifies the system of classification for goods and services which applies for all statutory purposes to all trademark applications filed in the Patent Office on or before Aug. 31, 1973, and to registrations issued on the basis of such applications, except when the registration may have been issued under a classification system prior to that set forth in § 6.2. Moreover, this classification will also be utilized for facilitating trademark searches until all pending and registered marks in the search file are organized on the basis of the international system of classification.

(d) Renewals filed on registrations issued under a prior classification system will be processed on the basis of that system.

(e) Where the amount of the fee received on filing an appeal or petition to revive in connection with an application or on filing an affidavit under § 8(a) or § 8(b) or on an application for renewal or in connection with an opposition or petition for cancellation is sufficient for at least one class of goods or services but is less than the required amount because a multiple class application or registration is involved, the appeal or petition to revive or the affidavit or renewal application or opposition or petition for cancellation will not be refused on the ground that the amount of the fee was insufficient if the required additional amount of the fee is received in the Patent Office within the time limit set forth in the notification of this defect by the Examiner.

(f) Sections 6.3 and 6.4 specify the system of classification which applies to certification marks and collective membership marks.

(g) Classification schedules shall not limit or extend the applicant's rights.

2. Sections 6.1, 6.2 and 6.3 are redesignated as §§ 6.2, 6.3 and 6.4, respectively.

3. A new § 6.1 is added and reads as follows:

§ 6.1. *International schedule of classes of goods and services*

GOODS

1. Chemical products used in industry, science, photography, agriculture, horticulture, forestry; artificial and synthetic resins; plastics in the form of powders, liquids or pastes, for industrial use; manures (natural and artificial); fire extinguishing compositions; tempering substances and chemical preparations for soldering; chemical substances for preserving foodstuffs; tanning substances; adhesive substances used in industry.
2. Paints, varnishes, lacquers; preservatives against rust and against deterioration of wood; colouring matters, dyestuffs; mordants; natural resins; metals in foil and powder form for painters and decorators.
3. Bleaching preparations and other substances for laundry use; cleaning, polishing, scouring and abrasive preparations; soaps; perfumery, essential oils, cosmetics, hair lotions; dentifrices.
4. Industrial oils and greases (other than oils and fats and essential oils); lubricants; dust laying and absorbing compositions; fuels (including motor spirit) and illuminants; candles, tapers, night lights and wicks.
5. Pharmaceutical, veterinary, and sanitary substances; infants' and invalids' foods; plasters, material for bandaging; material for stopping teeth, dental wax, disinfectants; preparations for killing weeds and destroying vermin.
6. Unwrought and party wrought common metals and their alloys; anchors, anvils, bells, rolled and cast building materials; rails and other metallic materials for railway tracks; chains (except driving chains for vehicles); cables and wires (nonelectric); locksmiths' work; metallic pipes and tubes; safes and cash boxes; steel balls; horseshoes; nails and screws; other goods in nonprecious metal not included in other classes; ores.
7. Machines and machine tools; motors (except for land vehicles); machine couplings and belting (except for land vehicles); large size agricultural implements; incubators.
8. Hand tools and instruments; cutlery, forks, and spoons; side arms.
9. Scientific, nautical, surveying and electrical apparatus and instruments (including wireless), photographic, cinematographic, optical, weighing, measuring, signalling, checking (supervision), life-saving and teaching apparatus and instruments; coin or counterfreed apparatus; talking machines; cash registers; calculating machines, fire extinguishing apparatus.
10. Surgical, medical, dental and veterinary instruments and apparatus (including artificial limbs, eyes and teeth).
11. Installations for lighting, heating, steam generating, cooking, refrigerating, drying, ventilating, water supply and sanitary purposes.
12. Vehicles; apparatus for locomotion by land, air or water.
13. Firearms; ammunition and projectiles; explosive substances; fireworks.
14. Precious metals and their alloys and goods in precious metals or coated therewith (except cutlery, forks and spoons); jewellery, precious stones, horological and other chronometric instruments.
15. Musical instruments (other than talking machines and wireless apparatus).
16. Paper and paper articles, cardboard and cardboard articles; printed matter, newspaper and periodicals, books; bookbinding material; photographs; stationery, adhesive materials (stationery); artists' materials; paint brushes; typewriters and office requisites (other than furniture); instructional and teaching material (other than apparatus); playing cards; printers' type and cliches (stereotype).
17. Gutta percha, india rubber, balata and substitutes, articles made from these substances and not included in other classes; plastics in the form of sheets, blocks and rods, being for use in manufacture; materials for packing, stopping or insulating; asbestos, mica and their products; hose pipes (nonmetallic).
18. Leather and imitations of leather, and articles made from these materials and not included in other classes; skins, hides; trunks and travelling bags; umbrellas, parasols and walking sticks; whips, harness and saddlery.
19. Building materials, natural and artificial stone, cement, lime, mortar, plaster and gravel; pipes of earthenware or cement; roadmaking materials; asphalt, pitch and bitumen; portable buildings; stone monuments; chimney pots.
20. Furniture, Mirrors, Picture Frames; articles (not included in other classes) of wood, cork, reeds, cane, wicker, horn bone, ivory, whalebone, shell, amber, mother-of-pearl, meerschaum, celluloid, substitutes for all these materials, or of plastics.
21. Small domestic utensils and containers (not of precious metals, or coated therewith); combs and sponges; brushes (other than paint brushes); brushmaking materials; instruments and material for cleaning purposes, steel wool; unworked or semi-worked glass (excluding glass used in building); glassware, porcelain and earthenware, not included in other classes.
22. Ropes, string, nets, tents, awnings, tarpaulins, sails, sacks; padding and stuffing materials (hair, kapok, feathers, seaweed, etc.); raw fibrous textile materials.
23. Yarns, threads.
24. Tissues (piece goods); bed and table covers; textile articles not included in other classes.
25. Clothing, including boots, shoes and slippers.
26. Lace and embroidery, ribands and braid; buttons, press buttons, hooks and eyes, pins and needles; artificial flowers.
27. Carpets, rugs, mats and matting; linoleums and other materials for covering existing floors; wall hangings (nontextile).
28. Games and playthings; gymnastic and sporting articles (except clothing); ornaments and decorations for Christmas trees.

29. Meat, fish, poultry and game; meat extracts; preserved, dried and cooked fruits and vegetables; jellies, jams; eggs, milk and other dairy products; edible oils and fats; preserves, pickles.
30. Coffee, Tea, cocoa, sugar, rice, tapioca, sago, coffee substitutes; flour, and preparations made from cereals; bread, biscuits, cakes, pastry and confectionery, ices; honey, treacle; yeast, baking powder; salt, mustard, pepper, vinegar, sauces, spices; ice.
31. Agricultural, horticultural and forestry products and grains not included in other classes; living animals; fresh fruits and vegetables; seeds; live plants and flowers; foodstuffs for animals, malt.
32. Beer, ale and porter; mineral and aerated waters and other nonalcoholic drinks; syrups and other preparations for making beverages.
33. Wines, spirits and liqueurs.
34. Tobacco, raw or manufactured; smokers' articles; matches.

SERVICES

35. Advertising and business.
36. Insurance and financial.
37. Construction and repair.
38. Communication.
39. Transportation and storage.
40. Material treatment.
41. Education and entertainment.
42. Miscellaneous.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Date: May 14, 1973.

Approved:
BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

(Pub. in 38 F.R. 14681, June 4, 1973)

Patent Office Services

A notice concerning delays in furnishing Certified Copies was published Aug. 8, 1972 (901 O.G. 412). This notice announced the initiation of a special "Expedited Service" for obtaining copies of pending applications promptly. As indicated in the notice, this special service would be terminated upon restoration of our regular service to an acceptable level.

I am pleased to report that our regular service has been restored to an acceptable level and this special program is being terminated.

However, our efforts to improve our services in these areas will continue. We have made progress, but are not resting on that record. We recognize that there are still problems of accuracy and quality in the filling of orders. These are currently being examined in an effort to bring about necessary improvements.

Thank you for your cooperation and understanding during this difficult period.

ROBERT GOTTSCHALK,
May 30, 1973. *Commissioner of Patents.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office on the basis of 4 years or more service in the Examining Corps. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before July 27, 1973.

Andewelt, Roger B., 2000 S. Eads St., Arlington, Va. 22202
Huberfeld, Harold, 815 Thayer Ave., #1234, Silver Spring, Md. 20910
Leipold, Paul A., 8442 Vallance Road, Le Roy, N.Y. 14482

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,509,833, T. Miller, MAGNIFYING AND LIGHT CONCENTRATING DEVICE FOR TELEPHONE DIALS, filed Nov. 16, 1971, D.C., N.D. Ohio (Toledo), Doc. C71–349, *Tobias Miller v. General Telephone Company.* Patent invalid; question of infringement moot, Court reserves ruling on that issue. Complaint ordered dismissed, Dec. 11, 1972.

2,712,507, B. K. Green, PRESSURE SENSITIVE RECORD MATERIAL, filed Sept. 18, 1969, D.C., S.D. Ohio (Cincinnati), Doc. 7243, *The National Cash Register Co. v. U.S. Plywood-Champion Papers, Inc., changed name to Champion International Corporation.* Ordered, action dismissed without prejudice as to either the complaint or counterclaim, Dec. 13, 1972.

2,753,809, M. A. Garrison, ROTARY MOTOR OR PUMP; **3,076,514**, same, DEEP WELL MOTOR DRILL; **3,594,106**, same, VARIABLE SPEED MOTOR DRILL, filed Jan. 19, 1973, D.C. Colo. (Denver), Doc. C–4701, *Empire Oil Tool Company and Marion A. Garrison v. Ingersoll-Rand Company.*

2,776,587, W. Killius, AUTOMOBILE BUMPER, GRILLE AND BODY BENDING TOOL, filed Jan. 24, 1973, D.C., N.D. Tex. (Fort Worth), Doc. CA–4–2190, *Walter D. Whitney, doing business as Whitney Manufacturing Company v. H. W. Sprague, doing business as Esy-Way Tool Company.*

2,811,069, A. H. Faulkner, ELECTRICAL MUSICAL INSTRUMENT, filed Jan. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c137, *Alfred H. Faulkner v. Thomas Organ Co.*

2,906,875, E. T. Molinaro, STATION SAMPLING RADIO, filed May 12, 1972, D.C., M.D. Pa. (Scranton), Doc. C–72–250, *Edward T. Molinaro and Anthony P. Catanzaro v. Lafayette Radio Electronics Associated Stores of Hart Electronics Corporation.* Same, filed June 29, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72C882, *Edward T. Molinaro and Anthony P. Catanzaro v. Sonar Radio Corporation.* Same, filed Aug. 15, 1972, D.C., M.D. Pa. (Scranton), Doc. C–72–416, *Edward T. Molinaro and Anthony P. Catanzaro v. Radio Shack.* Same, filed Dec. 11, 1972, D.C., M.D. Pa. (Scranton), Doc. C–72–611, *Edward T. Molinaro and Anthony P. Catanzaro v. J. C. Penney Company, Inc.*

2,948,524, Sweeney and Kaji, PUMP FOR MOLTEN METAL, filed Dec. 12, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–1327, *The Carborundum Company v. High Temperature Sales and Fenton C. Koch.*

3,005,282, G. K. Christiansen, TOY BUILDING BRICK, filed Jan. 30, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–189–CC, *Interlego A.G. v. Entex Industries, Inc.*

3,029,291, A. J. Dietzler, METHOD FOR MAKING ALKYLIDENEBIS (DIBROMOPHENOLS), filed Oct. 16, 1972, D.C., W.D. Ark. (Fort Smith), Doc. ED–72–C–46, *Great Lakes Chemical Corporation v. The Dow Chemical Company.*

3,046,110, M. P. Schmidt, PROCESS OF MAKING PRINTING PLATES AND LIGHT SENSITIVE MATERIAL SUITABLE FOR USE THEREIN, filed Nov. 14, 1972, D.C. Md. (Baltimore), Doc. 19764, *Azoplate Corporation v. James E. Harper.*

3,069,330, A. L. Babson, METHOD OF DETERMINING GLUTAMIC-OXALACETIC TRANSAMINASE AND COMPOSITION THEREFOR, filed Sept. 18, 1969, D.C., S.D.N.Y., Doc. 69–4088, *Warner-Lambert Pharmaceutical Co. v. Technicon Corporation.* Final Judgment; all parties agreed upon a basis of determination of the matters alleged in the complaint; ordered that this action is hereby dismissed, Dec. 27, 1972.

3,076,514. (See 2,753,809.)

3,091,912, Stoddard and Seem, METHOD OF PROCESSING STRETCH YARN AND YARNS PRODUCED THEREBY, filed Oct. 31, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1720–C–CA, *Lex-Tex Ltd., Inc. v. Georgia Griffin Fashions, Inc.*

3,093,528, R. L. Reich, LABEL APPLYING MEANS, filed Mar. 14, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–586–ALS, *Compac Corporation v. Synchro Electronics, Inc.* Consent judgment, patent valid, plaintiff is owner, defendant restrained, Sept. 21, 1972.

3,141,872, Natta, Pino and Mazzanti, POLYMERIZATION CATALYST AND STEREOSPECIFIC POLYMERIZATION OF PROPYLENE THEREWITH, filed Nov. 16, 1972, D.C. Del. (Wilmington), Doc. 4518, *Montecatini Edison v. Phillips Petroleum Company and Diamond Shamrock Corporation.*

3,143,610, G. W. Gustafson, MOISTURE RESPONSIVE CONTROL APPARATUS, **filed** Aug. 2, 1972, D.C. Del. (Wilmington), Doc. 4440, *General Time Corporation* v. *Honeywell Inc.*

3,299,304, B. B. Hull, LAMINATED CORE HAVING LOW COMPRESSIBILITY CHARACTERISTIC FOR AN ELECTRICAL INDUCTIVE DEVICE; **3,490,143,** same, METHOD OF MANUFACTURING A CORE FOR AN ELECTRICAL INDUCTIVE DEVICE; **Re. 26,788,** same, MOTOR STATOR STACK OF BONDED LAMINATIONS WITH LESS BONDING MATERIAL AT BOLT HOLE REGIONS, **filed** Jan. 29, 1973, D.C., E.D. Ky. (Lexington), Doc. 2478, *General Electric Company* v. *A. O. Smith Corporation.*

3,301,331, Looker and Greedy, METHOD OF AND APPARATUS FOR HARVESTING VINE CROPS, **filed** Feb. 1, 1973, D.C., S.D. Ill. (Peoria), Doc. P–C–73–10, *FMC Corporation* v. *Hart-Carter Company.*

3,351,289, R. J. Demaison, APPARATUS FOR APPLYING A PROTECTIVE REFRACTORY COATING TO THE REFRACTORY LININGS OF BASIC OXYGEN FURNACES; **3,351,460,** same, METHOD FOR PROLONGING THE LIFE OF REFRACTORY LININGS IN FURNACES OF THE KALDO, LINZ-DONOWITZ, DEMAY OR BASIC OR ACID CONVERTER TYPES; **3,460,933,** same, METHOD OF CONCURRENTLY OPERATING FURNACES OF THE ACID OR BASIC CONVERTER TYPES, **filed** Mar. 20, 1970, D.C. Del. (Wilmington), Doc. 3862, *Quigley Company, Inc.* v. *Bethlehem Steel Corporation.* Stipulation and order signed by Chief Judge Wright, parties have entered into an agreement to settlement of this suit. Complaint is dismissed with prejudice, counterclaim is dismissed with prejudice, Feb. 22, 1972.

3,351,460. (See 3,351,289.)

3,409,916, Billig and Schleeweiss, OVAL SWIMMING POOL, **filed** Mar. 29, 1972, D.C.N.J. (Newark), Doc. 571–72, *Bilnor Corporation* v. *Home & Roam Leisure Products, Inc.* Consent judgment releasing defendant from any patent infringement claim; releasing plaintiff from all counterclaims filed, Jan. 31, 1973.

3,454,210, Spiegel and Monia, EASY OPENING AND RECLOSABLE PACKAGE, FILM THEREFOR AND PROCESS, **filed** Jan. 29, 1973, D.C., N.D. Ohio (Youngstown), Doc. C–73–98–Y, *Standard Packaging Corporation* v. *Superior's Brand Meats, Inc.*

3,460,933. (See 3,351,289.)

3,478,700, Lundvall, Loomis and Breen, FLOOR LATCH STRIP FOR RAILWAY CARS; **3,570,416,** J. A. Shook, FREIGHT-BRACING APPARATUS, **filed** Oct. 4, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2492, *Unarco Industries, Inc.* v. *Evans Products Company et al.*

3,490,143. (See 3,299,304.)

3,502,081, S. P. Amoils, CRYOSURGICAL INSTRUMENT, **filed** Mar. 27, 1970, D.C. Conn. (New Haven), Doc. 13771, *Dynatech Corp.* v. *Frigitronics, Inc.* Stipulation for dismissal filed Aug. 9, 1972 by parties.

3,570,416. (See 3,478,700.)

3,594,106. (See 2,753,809.)

Re. 26,788. (See 3,299,304.)

D. 202,172, R. Paulich, DOOR KNOCKER, **filed** Aug. 18, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1910–R, *Columbia Specialty Company, Inc.* v. *Personally Yours, Charles A. Larrain and Donald M. McLean.* Filed stipulation for dismissal with prejudice and order thereon, Jan. 29, 1973.

Certificates of Correction for the Week of June 26, 1973

Re. 27,490	3,671,468	3,698,780	3,706,818
D. 225,260	3,672,282	3,698,987	3,707,272
D. 226,008	3,672,890	3,699,830	3,707,433
3,523,420	3,676,385	3,700,339	3,708,385
3,546,361	3,679,535	3,700,502	3,708,433
3,550,790	3,679,612	3,700,819	3,708,501
3,552,502	3,679,911	3,701,017	3,708,929
3,598,536	3,680,945	3,701,401	3,709,741
3,608,146	3,681,008	3,701,582	3,709,782
3,609,143	3,681,241	3,701,720	3,709,955
3,616,773	3,682,215	3,701,844	3,710,015
3,622,256	3,682,590	3,701,891	3,710,048
3,628,887	3,683,822	3,701,898	3,711,438
3,631,470	3,684,807	3,702,010	3,712,131
3,632,998	3,685,908	3,702,446	3,712,233
3,633,127	3,685,982	3,702,474	3,712,498
3,636,238	3,686,476	3,702,757	3,713,205
3,642,721	3,687,638	3,703,241	3,713,541
3,647,818	3,688,198	3,703,328	3,713,557
3,650,906	3,690,363	3,704,250	3,714,122
3,653,079	3,690,833	3,704,348	3,715,290
3,655,842	3,691,217	3,704,394	3,715,650
3,659,369	3,691,509	3,705,443	3,716,412
3,663,298	3,691,829	3,706,016	3,716,426
3,665,314	3,692,552	3,706,126	3,719,867
3,668,116	3,695,335	3,706,417	
3,670,638	3,695,661	3,706,646	

Disclaimers

3,428,904.—*Rahmat A. Aziz*, San Jose, Calif. DATA DETECTOR FOR MAGNETIC STORAGE DEVICE. Patent dated Feb. 18, 1969. Disclaimer filed Feb. 2, 1973, by the assignee, *International Business Machines Corporation*.

Hereby enters this disclaimer to all claims of said patent.

3,681,087.—*Theodore R. Johnson, Jr.*, Weston, Mass. CHEWING GUM COMPOSITION. Patent dated Aug. 1, 1972. Disclaimer filed Feb. 2, 1973, by the assignee, *Mirlin Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to July 11, 1989.

3,682,881.—*Lajos F. Fekete*, Valinda and *Edward Shanbrom*, Santa Ana, Calif. FRACTIONATION OF PLASMA USING GLYCINE AND POLYETHYLENE GLYCOL. Patent dated Aug. 8, 1972. Disclaimer filed Jan. 7, 1972, by the assignee, *Baxter Laboratories, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Dec. 28, 1988.

3,696,027.—*Alan G. Bridge*, El Cerrito, Calif. MULTI-STAGE DESULFURIZATION. Patent dated Oct. 3, 1972. Disclaimer filed May 15, 1972, by the assignee, *Chevron Research Company*.

Hereby disclaims the portion of the term of the patent subsequent to Feb. 17, 1987.

Dedications

2,737,758.—*Joseph E. Jendrisak*, Northville, Mich. GLASS BENDING MOLD. Patent dated Mar. 13, 1956. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,744,359.—*Joseph E. Jendrisak*, Rossford, Ohio. METHOD AND APPARATUS FOR BENDING GLASS SHEETS OR PLATES. Patent dated May 8, 1956. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,746,153.—*Harry A. Kuntz*, Toledo, Ohio. SHEET GLASS CUTTING MACHINE. Patent dated May 22, 1956. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,746,209.—*Emmett L. Walters*, Toledo, Ohio. EQUIPMENT FOR BENDING GLASS SHEETS. Patent dated May 22, 1956. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,747,342.—*George F. Ritter*, Toledo, Ohio. OSCILLATING EDGE GRINDER. Patent dated May 29, 1956. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,748,007.—*Alfred E. Badger* and *Donald E. Sharp*, Maumee, Ohio. GLASS REFRACTORY COMPOSITION. Patent dated May 29, 1956. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,755,212.—*Wilbur F. Brown*, Toledo, Ohio. SHEET GLASS. Patent dated July 17, 1956. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,758,422.—*Joseph E. Jendrisak*, Rossford, Ohio. MOLD FOR SHAPING GLASS SHEETS. Patent Dated Aug. 14, 1956. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,766,555.—*Joseph E. Jendrisak*, Rossford, and *Frank J. Carson*, Toledo, Ohio. GLASS BENDING METHODS AND FURNACES. Patent dated Oct. 16, 1956. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,774,189.—*Joseph E. Jendrisak*, Rossford, Ohio. APPARATUS FOR BENDING GLASS SHEETS OR PLATES. Patent dated Dec. 18, 1956. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,784,119.—*William E. McCown*, Maumee, and *James W. McAuley*, Perrysburg, Ohio. ULTRASONIC CLEANING OF CURVED SURFACES, AND APPARATUS THEREFOR. Patent dated Mar. 5, 1957. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,795,086.—*George Vincent Clark*, Ottawa, Ill. EDGE FINISHING METHOD AND APPARATUS. Patent dated June 11, 1957. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,798,338.—*Joseph E. Jendrisak*, Northville, Mich. GLASS BENDING APPARATUS. Patent dated July 9, 1957. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,800,175.—*Donald E. Sharp*, Maumee, Ohio. FIRING TANK FURNACES. Patent dated July 23, 1957. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,804,981.—*James F. La Plante* and *Delmar E. Carney*, Toledo, Ohio. APPARATUS FOR SUPPLYING BATCH MATERIALS TO A GLASS FURNACE. Patent dated Sept. 3, 1957. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,814,164.—*Frank J. Carson*, Toledo, and *Gerald White*, Rossford, Ohio. GLASS BENDING APPARATUS. Patent dated Nov. 26, 1957. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,824,411.—*David H. Goodwillie*, deceased, late of Toledo, Ohio, by Commerce National Bank of Toledo, executor, and *Wilbur F. Brown*, Toledo, Ohio. METHOD OF APPLICATION OF WATER-SOLUBLE CARBOHYDRATE TO HEATED ANNEALED GLASS. Patent dated Feb. 25, 1958. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,893,905.—*Frank J. Makovic, Jr.*, and *Arthur W. Goralske*, Toledo, Ohio. APPARATUS FOR PRESSING CURVED GLASS LAMINATIONS. Patent dated July 7, 1959. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

2,957,277.—*Gerald White*, Rossford, and *Frank J. Carson*, Toledo, Ohio. APPARATUS FOR BENDING GLASS SHEETS. Patent dated Oct. 25, 1960. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,009,017.—*Harry E. Conner* and *Paul T. Mattimoe*, Toledo, Ohio. LAMINATED TELEVISION SCREEN. Patent dated Nov. 14, 1961. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,023,542.—*Eugene W. Babcock*, Toledo, Ohio. SHEET GLASS BENDING APPARATUS. Patent dated Mar. 6, 1972. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,029,177.—*James H. Boicey* and *Charles H. Cowley*, Toledo, Ohio. METHOD OF AND APPARATUS FOR PRESSING SHEETS OF LAMINATED SAFETY GLASS. Patent dated Apr. 10, 1962. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,089,319.—*Frank J. Carson*, Toledo, and *Gerald White*, Rossford, Ohio. GLASS BENDING APPARATUS. Patent dated May 14, 1963. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,673,089.—*John H. Wright*, Elnora, N.Y. METHYL ALKYL SILICONE GREASE COMPOSITION AND METHOD OF MAKING SAME. Patent dated June 27, 1972. Dedication filed Jan. 26, 1972, by the assignee, *General Electric Company*.

Hereby dedicates to the Public the portion of the term of the patent subsequent to Nov. 3, 1987.

National Technical Information Service

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The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA "Patent Licensing Regulations."

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 137,062. Baths and Processes for the Electrodeposition of Nickel. Filed Apr. 23, 1971. PC $3/MF $0.95.

Patent application 152,836. A Selectable Level Alarming Personal Dosimeter. Filed June 14, 1971. PC $3/MF $0.95.

Patent application 234,877. Improved Method and Reagent for Determining Nitrogen Oxides. Filed Apr. 13, 1972. PC $3/MF $0.95.

Patent application 238,977. Preparation of (238) Pu (16) 02. Filed Mar. 28, 1972. PC $3/MF $0.95.

Patent application 257,965. In Situ Coal Bed Gasification. Filed May 30, 1972, PC $3.25/MF $0.95.

Patent application 258,399. High-Current Cable Engagement Tool. Filed May 31, 1972. PC $3/MF $0.95.

Patent application 262,802. Method for Storing Radioactive Combustible Waste. Filed June 14, 1972. PC $3/MF $0.95.

Patent application 266,092. Anhydrous Hydrogen Fluoride Electrolyte Battery. Filed June 26, 1972. PC $3/MF $0.95.

Patent 3,695,834. Cation Exchange Conversion of Hydroxylamine Sulfate to Hydroxylamine Nitrate. Filed Oct. 12, 1970. Patented Oct. 3, 1972. Not available NTIS.

Patent 3,697,373. Nuclear Fuel Element. Filed June 2, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,374. Gradient-Type Nuclear Fuel Plate. Filed Nov. 3, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,436. Production of Uranium and Plutonium Carbides and Nitrides. Filed Nov. 26, 1969. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,697,756. Device for Inserting Tagged Sand Into Ocean Floor. Filed July 7, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,699,337. Personnel Neutron Dosimeter. Filed Mar. 16, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,700,482. Uranium Surface Preparation for Electroless Nickel Plating. Filed Dec. 1, 1970. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,535. Carbon Fiber Structure and Method of Forming Same. Filed Mar. 12, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,551. Device To Prevent Sodium Freezing Around Shaft Penetration. Filed Feb. 18, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,554. Space Reactor Ground Safety and Control System. Filed June 20, 1968. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,568. Electrochemical Carbon Meter. Filed Apr. 14, 1969. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,602. Method for Mass Tagging Sand With a Radioactive Isotope. Filed Sept. 4, 1969. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,700,899. Method for Producing a Beam of Polarized Atoms. Filed Aug. 26, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,702,936. Dose Rate Dosimeter Circuit. Filed Mar. 19, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,706,511. Laminated Plastic Propeller. Filed Apr. 6, 1971. Patented Dec. 19, 1972. Not available NTIS.

Patent 3,711,591. Reductive Stripping Process for the Recovery of Uranium From Wet-Process Phosphoric Acid. Filed July 8, 1970. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,700,892. Separation of Mercury Isotopes. Filed Aug. 25, 1971. Patented Oct. 24, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 325,784. Reconstituted Asbestos Matrix. Filed Jan. 22, 1973. PC $3/MF $0.95.

Patent application 322,997. Bonding of Sapphire to Sapphire by Eutectic Mixture Aluminum Oxide and Zirconium Oxide. Filed Jan. 12, 1973. PC $3/MF $0.95.

Patent application 244,440. Star Tracking Reticles and Process for the Production Thereof. Filed Apr. 17, 1972. PC $3.25/MF $0.95.

Patent application 331,759. Cascade Plug Nozzle. Filed Feb. 13, 1973. PC $3.25/MF $0.95.

Patent 3,711,042. Aircraft Control System. Patented Jan. 16, 1973. Not available NTIS.

Patent 3,713,163. Plural Beam Antenna. Patented Jan. 23, 1973. Not available NTIS.

Patent 3,714,526. Phototransistor. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,712,712. Apparatus for Photographing Meteors. Patented Jan. 23, 1973. Not available NTIS.

Patent 3,712,121. Self-Recording Portable Soil Penetrometer. Patented Jan. 23, 1973. Not available NTIS.

Patent 3,712,120. Multi Axes Vibration Fixtures. Patented Jan. 23, 1973. Not available NTIS.

Patent 3,712,591. Zero Gravity Liquid Mixer. Patented Jan. 23, 1973. Not available NTIS.

[FR Doc. 73–11173; Filed 6–5–73; 8:45 am]

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DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents, Washington, D.C. 20545

Patent application 107,382. Fibrous Fibrin Sheet and Method for Producing Same. Filed Jan. 18, 1971. PC $3/MF $0.95.

Patent application 114,769. Improved Apparatus for Leaching Core Material From Sheared Segments of Clad Nuclear Fuel Pins. Filed Feb. 12, 1971. PC $3/MF $0.95.

Patent application 183,659. Gold Recovery From Aqueous Solutions. Filed Sept. 24, 1971. PC $3/MF $0.95.

Patent application 268,262. A Method of Repressing the Precipitation of Calcium Fluozirconate. Filed July 3, 1972. PC $3/MF $0.95.

Patent application 284,810. Catalytic Reduction of Nitrogen Oxides. Filed Oct. 30, 1972. PC $3/MF $0.95.

Patent application 243,365. A Solid State Radiation Detector. Filed Apr. 11, 1972. PC $3/MF $0.95.

Patent 3,683,975. Method of Vibratory Loading Nuclear Fuel Elements. Filed Feb. 12, 1971. Patented Aug. 15, 1972. Not available NTIS.

Patent 3,693,012. Passive Source of Secondary Radiation With a Source-Shield Grid. Filed Jan. 22, 1971. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,697,235. Method of Purifying Uranium Hexafluoride by Reduction To Lower Uranium Fluorides. Filed Mar. 31, 1960. Patented Oct. 10, 1972. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Westwood Bldg., Bethesda, Md. 20014

Patent application 275,777. Countercurrent Chromatography With Flow-Through Coil Planet Centrifuge. Filed July 27, 1972. PC $3/MF $0.95.

Patent application 272,144. Vibrating Pipette Probe Mixer. Filed July 17, 1972. PC $3/MF $0.95.

Patent application 335,155. Method of Making Thin Defect-Free Silicone Rubber Films and Membranes. Filed Feb. 23, 1973. PC $3/MF $0.95.

Patent application 274,291. Preparation of Urushiol From Poison Ivy or Poison Oak. Filed July 21, 1972. PC $3/MF $0.95.

[FR Doc. 73–11174; Filed 6–5–73; 8:45 am]

Pub. in 38 F.R. 14870, June 6, 1973

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 6, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-22-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-03-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-02-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-05-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	11-01-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-21-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-03-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-09-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-08-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	7-06-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-03-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-13-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-02-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-24-72

Expiration of patents: The patents within the range of numbers indicated below expire during June 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,748,388 to 2,752,804, inclusive
Plant Patents..... Numbers 1,481 to 1,491, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JUNE 26, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T911,012
SPRAYABLE, SAG-RESISTANT METHACRYLATE SYRUP AND PROCESS FOR PREPARING A FINAL GEL COAT THEREFROM

Ronald Newell Liesemer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 811,255, Mar. 27, 1969. This application July 21, 1971, Ser. No. 164,899

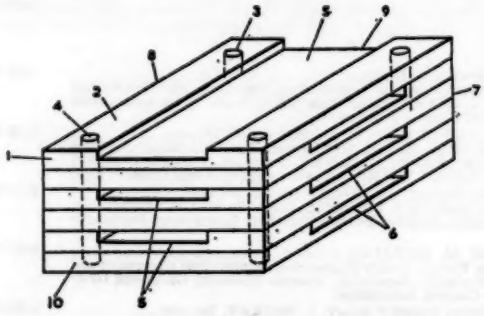
Int. Cl. C08f *15/16, 45/52*
U.S. Cl. 260—28.5 R
No Drawing. 20 Pages Specification

A sprayable, sag-resistant methacrylate syrup containing a monomer liquid containing methyl methacrylate, a polymer containing methyl methacrylate polymerized units, a thixotropic agent, pigment and paraffin wax; and a process for preparing a final gel coat therefrom by mixing said syrup with an initiator system, curing for up to 3 hours at ambient conditions; and postcuring at 95° C. to 140° C. for from 30 minutes to 16 hours.

T911,013
HEAT EXCHANGERS

David Evan Bryan Morgans, Hatfield, and Frank Smith, Widnes, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 13, 1971, Ser. No. 171,426
Claims priority, application Great Britain, Aug. 28, 1970, 41,603/70
Int. Cl. F28f *3/00*
U.S. Cl. 165—166
5 Sheets Drawing. 10 Pages Specification



Heat exchangers for transfer of heat from one fluid to another through thin walled members made of a plastics material resistant to corrosive action of the fluids. The heat exchanger is a block formed from plates of plastics material spaced apart from each other, at least over areas intermediate their edges, for flow of fluid therebetween and spacers of plastics material at opposite edges of the plates forming seals between adjacent plates at the edges and defining passages for fluids between spaced apart areas of the plates. In one embodiment one set of passages terminates at one pair of faces of the block and another set of passages, not communicating with the first set, terminates at a different pair of faces of the block. Thus a fluid of one temperature circulates adjacent a fluid of a different temperature, the fluids being separated from each other by a thin walled member.

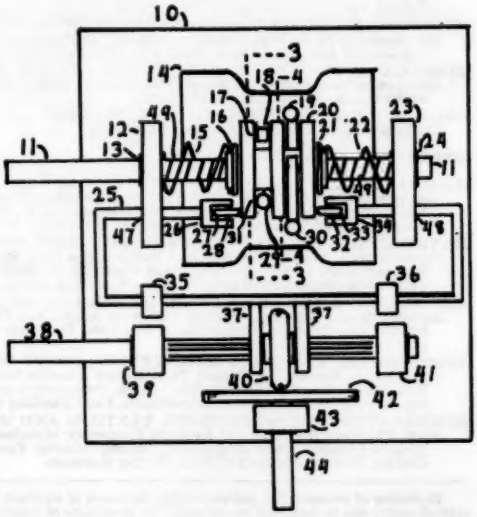
Suitable plastics materials include any polymeric material capable of withstanding the temperature, pressure and corrosive conditions within the heat exchanger. Illustrative materials include polytetrafluoroethylene, high density polyethylene and polypropylene.

Sheet thickness, sufficient to provide fluid separation yet thin enough to provide for sufficient heat transfer, is usually from 0.01–1.0 mm., preferably 0.25–0.5 mm. Spacer thickness is not critical but should be chosen to provide sufficient flow of fluid through the exchanger.

T911,014
SYSTEM FOR A ROTARY MECHANICAL TRANSLATING DEVICE

Thomas A. W. K. Watson, 2720 Goyer, Apt. 24, Montreal, Quebec, Canada

Filed Nov. 4, 1971, Ser. No. 195,663
Int. Cl. F16h *15/04*
U.S. Cl. 74—190.5
1 Sheet Drawing. 5 Pages Specification



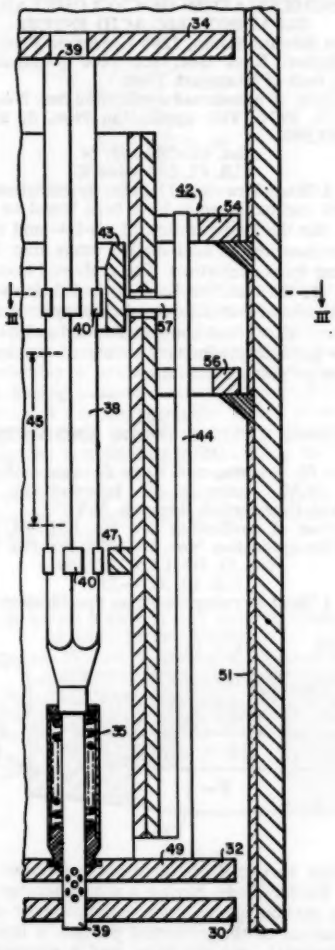
A rotary mechanical translating device which produces rotary mechanical amplification, transfers power from a prime mover to an output shaft as a magnified function of an angular displacement of an input shaft. The device exhibits a power gain, since it transfers power from a

prime mover to an output shaft, the power transfer being controlled by the rotation of an input shaft. The translating device described comprises a variable speed transmission having a speed control which is activated by a tachometer. The tachometer adjusts the speed control of the transmission as a function of the speed of rotation of its input shaft. The output is derived from the transmission which is driven by a prime mover.

T911,015
NUCLEAR CORE POSITIONING SYSTEM

Hans Dieter Garkisch, Irwin, Howard W. Yant, Greensburg, and John F. Patterson, Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 21, 1971, Ser. No. 210,447
Int. Cl. G21c *3/30*
U.S. Cl. 176—85
3 Sheets Drawing. 14 Pages Specification

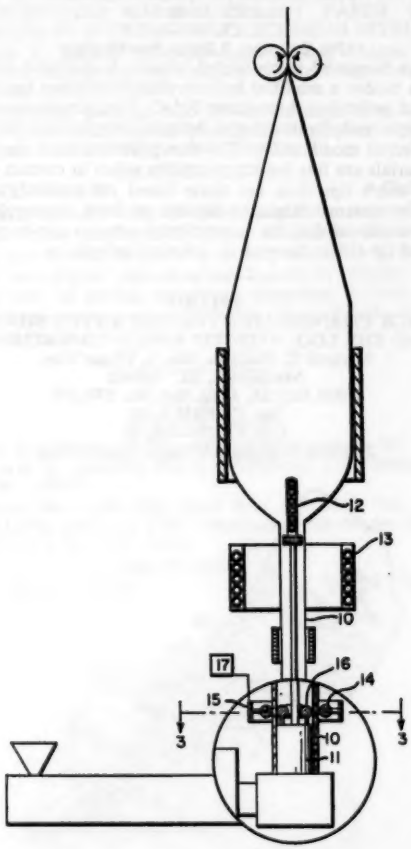


A structural support system for the core of a nuclear reactor which achieves relatively restricted clearances at operating conditions and yet allows sufficient clearance between fuel assemblies at refueling temperaturs. Axially displaced spacer pads having variable between pad spacing and a temperature compensated radial restraint system are utilized to maintain clearances between the fuel elements. The core support plates are constructed of metals specially chosen such that differential thermal expansion produces positive restraint at operating temperatures.

T911,016
TUBULAR PREPARATION OF THERMOPLASTIC FILM

Edward J. Moore, Florence, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 36,034, May 11, 1970. This application Mar. 30, 1972, Ser. No. 239,768
Int. Cl. B29c *5/04, 23/00*; B29d *9/24*
U.S. Cl. 264—95
2 Sheets Drawing. 3 Pages Specification



In a continuous process for producing an oriented thermoplastic film comprising extruding a thermoplastic material in its formative state into the form of a tube, quenching the tube to a temperature below its formative state, reheating the tube to a temperature within its orientation temperature range, expanding the tube and thereafter collapsing and collecting the tube, the improvement which comprises oscillating the tube about its axis by applying rotational torque to the tube after quenching and before reheating to distribute gauge irregularities about the circumference of the tube.

It is preferred that the tube be oscillated through a rotational cycle of 180° at a rotational speed of $v/2d$ wherein v is the linear speed of the tube being extruded and d is the distance between the extrusion die and the

region of initial orientation expansion to distribute gauge irregularities throughout the full circumference of the tube.

Oscillation of the tube is accomplished by rotation of a tube advancer comprising a plurality of idler rolls circularly disposed around the internal wall of the quenched tube and a plurality of driven rolls in cooperative arrangement with the idler rolls circumferentially positioned immediately exterior to the tube, the idler rolls and the driven rolls each being mounted on rotatable frames.

T911,017
RECONSTITUTED TOBACCO

Eugene D. Klug, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

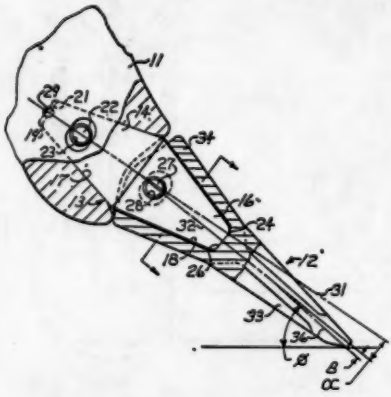
Filed June 13, 1972, Ser. No. 262,390
Int. Cl. A24b *3/14*
U.S. Cl. 131—17 A
No Drawing. 9 Pages Specification

An improved reconstituted tobacco is disclosed having as a binder a modified hydroxypropyl cellulose having a cloud point less than about 30° C. Phenylhydroxyethyl-, benzyl- and hydroxybutyl hydroxypropyl cellulose are preferred modifications. Tobacco products based on such materials are less moisture-sensitive when in contact with the user's lips than are those based on presently used binder systems. Since the binders are both thermoplastic and water-soluble, the reconstituted tobacco can be processed by either thermal or solution techniques.

T911,018
QUICK CHANGE ADAPTER FOR RIPPER SHANKS AND THE LIKE WITH TIP ANGLE ADJUSTMENT

Michael T. Radigan, Rte. 1, Diane Way, Manhattan, Ill. 60442

Filed July 28, 1972, Ser. No. 276,179
Int. Cl. E02f *9/28*
U.S. Cl. 37—142 R
2 Sheets Drawing. 10 Pages Specification



An adapter for securing a ground engaging tooth to a support such as a ripper shank wherein the adapter is of double frusto-pyramidal configuration with one end removably secured in a socket in the support and the opposite end removably secured in a mating socket of the ground engaging tooth. The opposite frusto-pyramidal ends of the adapter as shown in FIG. 1 are askew of one another such that by rotation of the adapter 180° in the support socket, two different tooth tip angles with respect to the ground surface are obtained. The ground engaging tip end of the tooth may also be askew from the socket portion thereof whereby rotation of the tooth 180° on the leading frusto-pyramidal end of the adapter provides two different tip angles with respect to the ground surface for each of the reversible positions of the adapter in the support socket, i.e., a total of four different tip angle adjustments.

T911,019
n-BUTYRIC ACID HAVING ANTI-FUNGAL ACTIVITY

Emma-Jane E. Drury, 575 Britton Road, Rochester, N.Y. 14616, and David C. Herting, 2778 Nicholas St., Spencerport, N.Y. 14559

Filed Sept. 15, 1972, Ser. No. 289,388
Int. Cl. A23k *1/02;* **A23l** *3/34*
U.S. Cl. 99—6
No Drawing. 7 Pages Specification

n-Butyric acid in amounts of only about 0.25% to 4% by weight of feed is found to have overall higher antifungal activity than acetic, propionic, or isobutyric volatile fatty acids tested on animal feeds containing molasses.

T911,020
ISOMERIZATION OF CYCLOHEXANE-DICARBOXYLIC ACID ESTERS

Theodore Edward Stanin, 1300 Greenfield Place 37662, and Robert Estes Gee, Jr., 2140 Swannanoa Ave. 37664, both of Kingsport, Tenn.

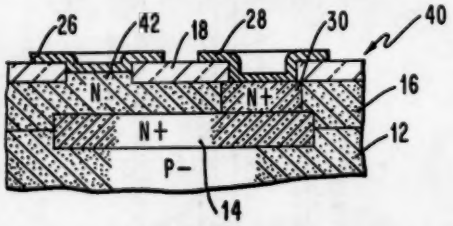
Continuation of abandoned application Ser. No. 114,432, Feb. 11, 1971. This application Nov. 3, 1972, Ser. No. 303,590
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 K
2 Sheets Drawing. 11 Pages Specification

Organic carboxylic acids have been found to be active catalysts for the isomerization of cis-1,4- and cis-1,3-cyclohexanedicarboxylic acid dialkyl esters into their corresponding trans derivatives. The preferred isomerization catalysts are the dicarboxylic acids and their monoesters, (such as trans-1,4-cyclohexanedicarboxylic acid or its monoester), since these compounds need not be removed from the product preliminary to use of the isomerizate product in polyester manufacture.

T911,021
SURFACE BARRIER DIODE AND METHOD OF MAKING

Narasipur G. Anantha and Kanu G. Ashar, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 851,598, Aug. 20, 1969. This application Nov. 10, 1972, Ser. No. 305,636
Int. Cl. H01l *5/02, 19/00*
U.S. Cl. 317—234
1 Sheet Drawing. 16 Pages Specification



A surface barrier diode, commonly referred to as a Schottky Barrier diode, having a semiconductor body, a projecting portion on the body, a low barrier metal on the top surface of the projecting portion, a layer of insulating material over the body, and a terminal means in electrical contact with the layer of low barrier metal, and a second terminal in ohmic contact with the semiconductor body. The method for forming the diode includes the step of forming a projecting portion on a monocrystalline semiconductor body, depositing a low barrier metal on the top surface of the projecting portion, and establishing contact terminals with the low barrier metal and the semiconductor body.

REISSUES

JUNE 26, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

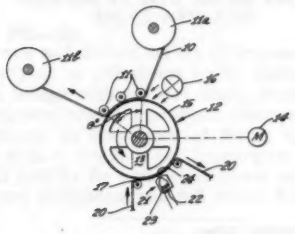
27,685
DOUBLE TRANSFER CURIE-POINT AND MAGNETIC BIAS TAPE COPY SYSTEM

Alfred M. Nelson, Redondo Beach, Calif., assignor to The Magnavox Company

Original No. 3,496,304, dated Feb. 17, 1970, Ser. No. 599,268, Dec. 5, 1966. Application for reissue Nov. 1, 1971, Ser. No. 194,763

Int. Cl. G11b *5/86*

U.S. Cl. 179—100.2 E 12 Claims



Method and system is disclosed for copying magnetic recording, for example, on a regular magnetic tape onto another tape, for example, of the same type, by using an intermediary carrier having a relatively low Curie point, preferably a lower Curie point than the master tape, and having a room temperature coercivity above the coercivity of the copy tape. The content of the master tape is progressively copied onto the intermediary by thermomagnetic technique and after cooling, the information is transferred from the intermediary again progressively to the copy tape by magnetic high-frequency bias slowly decaying as the respective tape increment recedes from the bias source.

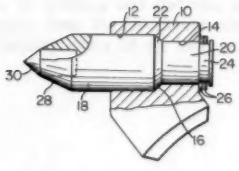
27,686
PICK TYPE MINING BIT AND SUPPORT BLOCK THEREFOR

Thomas J. Kniff, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Original No. 3,650,565, dated Mar. 21, 1972, Ser. No. 34,249, May 4, 1970. Application for reissue July 28, 1972, Ser. No. 276,234

Int. Cl. E21c *35/18*

U.S. Cl. 299—86 10 Claims



The specification discloses a heavy duty pick type mining bit and a support block therefor in which the block has a bore completely therethrough with a shoulder intermediate the ends of the bore and the pick type tool or bit is shaped to conform to the bore in the block and to take a seat on the shoulder therein and is retained in the block by retaining rings on the small end of the pick outside the block.

27,687
QUENCHING THE FLUOROESCENCE OF OPTICAL BRIGHTENER COMPOUNDS IN PAPER BY MEANS OF HYDROXYMETHYLAMINO NITRILE

Donald V. Speese, Moorestown, N.J., and Chester B. Brown, Broadview, Ill., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original No. 3,542,642, dated Nov. 24, 1970, Ser. No. 709,782, Mar. 1, 1968. Application for reissue June 1, 1972, Ser. No. 258,676

Int. Cl. D21d *3/00*

U.S. Cl. 162—158 6 Claims

The fluorescent effect of optical brightener compounds on substrates employed in paper making is effectively quenched by the application to the substrate of from about one-quarter part to about 5 parts by weight, for every part of optical brightener compound present, of the compound hydroxymethylamino [aceto]nitrile from an aqueous solution.

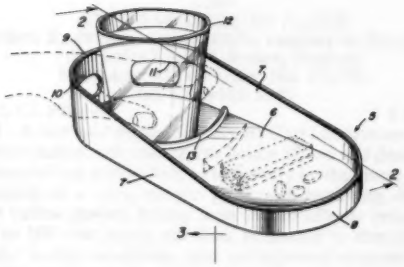
27,688
SERVICE TRAY

Mary Lee White and Donald C. White, both of 304 The Royal St. Andrews, 555 S. Gulfstream Ave., Sarasota, Fla. 33577

Original No. 3,401,858, dated Sept. 17, 1968, Ser. No. 663,382, Aug. 25, 1967. Application for reissue Sept. 15, 1970, Ser. No. 72,556

Int. Cl. B65d *1/34*

U.S. Cl. 224—48 R 9 Claims



A service tray having a bottom which is bounded by a substantially vertical, peripheral wall. At one end of the tray the wall is provided with a pair of transversely spaced, oval openings for respectively receiving the thumb and index finger of a user's hand so as to embrace a beverage container resting on the bottom adjacent the openings. The remainder of the tray bottom is designed to receive hors d'oeuvres and the like.

27,689

DEVICE FOR HOLDING AND EMPTYING TUBES

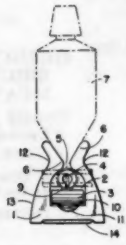
Else Hausmann and Heinrich Hausmann, both of 3 Hegauweg, Jestetten, Baden, Germany

Original No. 3,525,457, dated Aug. 25, 1970, Ser. No. 804,109, Mar. 4, 1969. Application for reissue June 8, 1972, Ser. No. 261,113

Claims priority, application Germany, Mar. 7, 1968, 1,611,934

Int. Cl. B65d *35/34*

U.S. Cl. 222—100 7 Claims



This invention relates to a holder for grasping tubes, such as toothpaste tubes, at their lower ends. A simple construction utilizes a housing, a plate spring which snap-fits into the housing, and a wind up key.

PLANT PATENTS

GRANTED JUNE 26, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,365
BEGONIA PLANT

Otto Rieger, deceased, by Gertrud Rieger, legal representative, Nurtingen, Germany, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Jan. 27, 1972, Ser. No. 221,456
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of begonia characterized particularly as to uniqueness by its distinctive, strongly indented foliage with serrated edges, prolific production of underground adventitious shoots when propagated from leaf cuttings, its abundance of leaves which give the finished plant a compact, full appearance; its abundance of petals and by its orange-red flower color with good clarity, and doubleness and full flower form.

3,366
WHITE NARCISSUS

Herut Yahel, Rishon Lezion, Israel, assignor to The State of Israel, Ministry of Agriculture, Jerusalem, Israel

Filed Feb. 3, 1972, Ser. No. 223,377
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

A new variety of white narcissus, sub-genus Tazetta, originating from Narcissus Paperwhite and having desired properties especially as regards growth capacity, propagative characteristics, blooming ability, earliness of blooming, flower size and form and stem strength.

3,367
CARNATION PLANT

William E. Duffett, Akron, Ohio, and Thomas G. Harcharick, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 29, 1971, Ser. No. 203,087
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—73 **1 Claim**

1. A new and distinct cultivar of carnation characterized particularly as to its uniqueness when compared to the cultivar Diplomat by its stems which are stronger and average five inches shorter; its response or flowering peaks which are approximately three to four weeks earlier on the first crop from comparative single pinch crops planted and pinched on approximately the same date, with the return crop peaking approximately four to six weeks earlier; by its higher production, producing approximately 13 more stems per square foot from crops of approximately 11 month duration from plant date to discard date; by its splitting and slabbing percentages which are significantly less; by its flower size which is one-quarter to three-quarters of an inch larger in diameter, with approximately 20–30 more petals, with the petal margin being more deeply serrated and developing less burn or dehydration of the petal margin, and by its keeping quality, with the flowers keeping approximately three to four days longer.

3,368
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Sept. 30, 1971, Ser. No. 185,458
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Neptune by its flowers which are approximately one-half inch larger; flowers which provide approximately two to four days longer bench life; no pink tinging of the flowers at temperatures below 60° F.; broader, more ridged petals; no disc florets or pollen, no development of any longitudinal petal roll under low light conditions; larger foliage, more coarse in texture and lighter in color, with a more coarse serration to the leaf margin, and by its approximately three inch more spread to a pinched plant in flower; and characterized particularly as to uniqueness when compared to the cultivar Winter Carnival by its stronger, more compact, less upright plant habit; darker green foliage; a smaller flower form but one with better symmetry and less reflexing; pure white flower color that never tinges with a cool finish, and by its approximately 5–7 days longer bench and home life.

3,369
CHRYSANTHEMUM PLANT

William E. Duffett, Akron, Ohio, assignor to Framptons Nurseries Limited, Sussex, England

Filed Aug. 13, 1971, Ser. No. 171,781
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a wiry, upright plant with incurving, decorative yellow flowers having from 220 to 250 ray petals and 30 to 100 disc petals, excellent resistance to damping off under humid conditions, and an improved response time of 1½ weeks during short day seasons in poor light conditions.

PATENTS

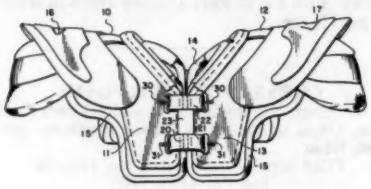
GRANTED JUNE 26, 1973

GENERAL AND MECHANICAL

3,740,762
PAD INTERLOCKING APPARATUS

John H. Truelove, Vernon, Tex., assignor to Protective Pads Inc., Grand Prairie, Tex.

Filed Apr. 22, 1971, Ser. No. 136,490
Int. Cl. A41d *13/00*
U.S. Cl. 2—2 6 Claims

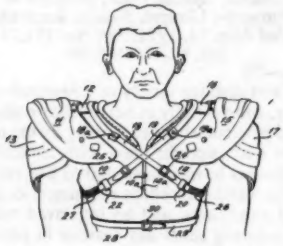


Disclosed is an apparatus for interconnecting the opposed U-shaped pad members of football shoulder pads. The interlocking device includes a pair of lugs interconnected by a strap. The lugs have expanded end portions adapted to be inserted and locked into elongated slots in the opposed U-shaped pads.

3,740,763
FOOTBALL SHOULDER PAD

Hal D. Mitchell, Aptos, Calif., assignor to A-t-O Inc., Willoughby, Ohio

Filed Dec. 22, 1971, Ser. No. 210,811
Int. Cl. A41d *13/00*
U.S. Cl. 2—2 8 Claims

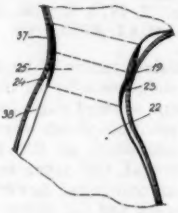


A football shoulder pad and upper torso protective covering in which the assembly is separated into flexibly connected right and left side portions, instead of the usual inflexible unitary assembly, thereby affording greater protection in vunerable areas of the upper torso and shoulders combined with greater flexibility to more nearly conform with the natural movements of the anatomy.

3,740,764
DIVING SUIT

Ingvar B. Elfstrom, Varvadersgatan 11, 417 31 Goteborg, and Dennis E. Osterlund, Box 7047, 434 00 Kungsbacka, both of Sweden

Continuation-in-part of Ser. No. 742,288, July 3, 1968, abandoned. This application June 1, 1971, Ser. No. 148,742
Int. Cl. B63c *11/04*, *11/28*
U.S. Cl. 2—2.1 R 5 Claims

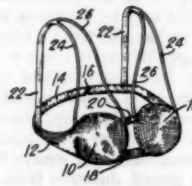


A diving suit made of an air-proof material, namely a closed cell porous rubber with a fabric cover on both sides, whereby the material has inherent heat-insulating properties, as well as a certain buoyancy. The suit has a close fit so that in normal pressure conditions a minimum air layer can form between the interior of the suit and the diver's body, the suit being provided with means for controlling the supply of air from a pressurized source to the interior of the suit, as well as the removal of the air from the suit, air supplies normally taking place for the purpose of compensating the compressing action upon the air layer, which is generated by the pressure of the water in dependance upon the diving depth.

3,740,765
GARMENT CONSTRUCTION

Michel Delplace, 4892 Victoria Avenue, Montreal, Quebec, Canada

Filed Oct. 14, 1971, Ser. No. 189,214
Int. Cl. A41d *7/00*
U.S. Cl. 2—67 5 Claims



A garment comprising a top brassiere portion and a bottom panty portion. The brassiere portion includes a front section having cups for enclosing the breasts and a flexible side strap connected to each of the cups at the lateral side thereof. A shoulder strap is connected to each of the side straps at one end thereof and to one of the cups at the other end thereof. The panty portion has a pair of flexible back straps, each of which is connected at one end thereof to the front of the panty portion at one side thereof and the other end of the back straps being connected to the juncture of the shoulder strap and the side strap on the opposite side of the brassiere portion to which it is connected to the panty portion.

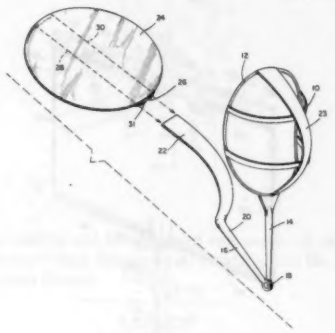
3,740,766
GOLF GLOVES
Edward J. Kobylarz, 303 Maple Avenue, Wallington, N.J.
Filed Jan. 24, 1972, Ser. No. 220,109
Int. Cl. A41d 19/00
U.S. Cl. 2—161 A 6 Claims

A pair of golf gloves is provided to facilitate the gripping of a golf club. One of the pair of gloves has a compartment for maintaining the middle, ring and little fingers of a first hand together when gripping a golf club and the other glove has a compartment for maintaining the index, middle and ring finger of the other hand together when gripping a golf club.

3,740,767
KNITTED HEADWEAR WITH WIND BARRIER
Richard D. Schuessler, 564 Meadow Road, Winnetka, Ill.
Filed Feb. 17, 1971, Ser. No. 116,080
Int. Cl. A42b 1/18
U.S. Cl. 2—173 30 Claims

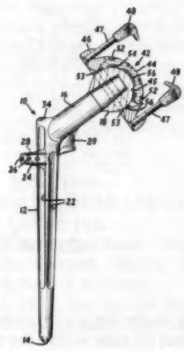
A cap and hood combination wherein the hood portion is composed of inner and outer layers of stretchable, porous, knitted material having aligned eye openings. Between the inner and outer knitted layers is a relatively non-porous and relatively non-stretchable intermediate layer formed of plastic or other suitable material, such intermediate layer having free lateral portions slidable with respect to the knitted layers and being positioned to protect the wearer's face against blasts of cold air which might otherwise pass through the porous knitted layers. The intermediate layer has an eye opening larger than, but aligned with, the eye openings of the knitted inner and outer layers, the lower portion of the intermediate layer's opening being defined by a flap which is foldable downwardly between the knitted layers when the eye openings of the inner and outer layers are expanded to expose the lower portion of a wearer's face. Means are provided for urging the flap into a raised position when the lower portion of the face is again covered by the inner and outer knitted layers.

3,740,768
SANITARY FACE MASK
Doris C. McCosker, 9206 Winchester Avenue, Margate, N.J.
Filed Dec. 22, 1971, Ser. No. 210,962
Int. Cl. A45d 44/12
U.S. Cl. 2—174 11 Claims



A frame defines a face mask and has a tongue pivotally mounted to a handle depending from the frame. The tongue is inserted into an envelope in a transparent plastic-like material and positioned to retain the material against the inside of the frame.

3,740,769
PROSTHESIS FOR HIP JOINTS
Edward J. Haboush, 715 Park Avenue, New York, N.Y.
Filed Feb. 11, 1971, Ser. No. 114,425
Int. Cl. A61f 1/24
U.S. Cl. 3—1 3 Claims



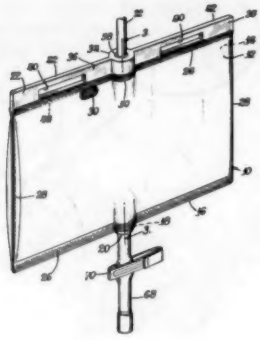
A prosthesis for hip joints is formed as a one-piece unit and has a spike-like stem that is inserted axially into the femur. An arm integral with the upper end of the stem projects outwardly at an obtuse angle relative to it and a ball is attached at the outer end of the arm for connecting the prosthesis to the acetabulum or artificial socket, whichever is used. A cup-shaped indexing means dimensioned and positioned to fit over the lesser trochanter projects outwardly from the stem. The axis of the arm and a ball is disposed at an angle relative to the cross-sectional axes of the stem so that when the indexing means engages the lesser trochanter, the arm and ball are aligned at the proper angle of anteversion.

3,740,770

INTEGRAL EDGE STRUCTURE FOR URINE COLLECTION BAG

Frank K. Villari, Oak Park, Ill., assignor to The Kendall Company, Boston, Mass.

Filed June 21, 1971, Ser. No. 155,016
Int. Cl. E03d 13/00
U.S. Cl. 4—110 20 Claims



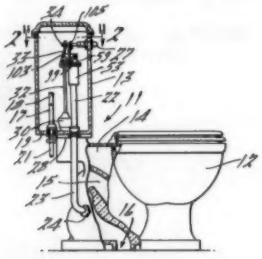
A liquid collection bag combining a rigid support member with flexible side walls, the support including as an integral part thereof a drip site chamber. A similar support member can also be utilized at the opposite end to complete the closure of the bag, with the drip site chamber functioning as an exit portal.

3,740,771

AIR VENTING DEVICE FOR A TOILET

John W. Bond, 3547 Merrick, Dearborn, Mich.

Filed May 12, 1971, Ser. No. 142,619
Int. Cl. E03d 9/04, 9/05, 11/00
U.S. Cl. 4—215 9 Claims



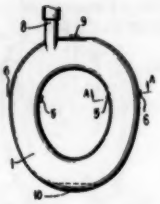
The venting device for a toilet is mounted upon a vent drain tube and a bowl fill tube within the tank. The operating handle for the toilet when moved clockwise opens a valve which moves a piston to raise a sealing head from the vent drain tube and direct atomized water from an atomizing head thereinto to create a suction. The created suction draws air upwardly through the bowl fill tube or overflow pipe from the bowl and discharges it downwardly through the vent drain tube into the drain. When the handle is operated in the opposite direction, that is to say counterclockwise, the water is shut off to the piston and atomizing head and the sealing valve is moved downwardly over the end of the vent drain tube. The end of the tube is below the water level controlled by the bowl fill tube so as to have the water rise above the vent drain tube to provide a further seal therefor. The water passage to the atomizing head is also sealed from the drain when the vent drain tube is closed by the sealing head.

3,740,772

VENTILATING SYSTEMS FOR SANITARY SYSTEMS

Arthur Chester Paley, 21 Boldrewood Street, Turner Canberra, Australia

Continuation-in-part of Ser. No. 784,538, Dec. 6, 1968, Pat. No. 3,564,624. This application Dec. 15, 1970, Ser. No. 98,283
Int. Cl. A47k 13/00; E03d 9/04
U.S. Cl. 4—217 6 Claims



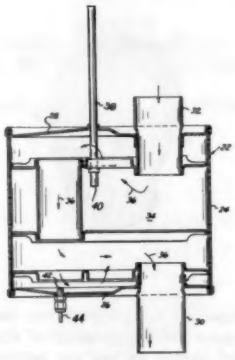
A ventilating means for the top of the pan or seat portion of the sanitary system. The ventilating means is provided by complementary top sections which are joined together in such a manner that intermediate portions thereof are spaced apart to provide a hollow member. Malodorous gases pass through ventilating holes in the lower section into the space between the complementary sections. An exhaust communicates with the space of the hollow device for carrying off the malodorous gases.

3,740,773

METHOD AND APPARATUS FOR DISPOSING OF HUMAN WASTE IN A VEHICLE

Charles L. Sargent, Ypsilanti, Mich., assignor to Thermason Corporation, Ann Arbor, Mich.

Filed June 24, 1971, Ser. No. 156,403
Int. Cl. B60r 15/04
U.S. Cl. 4—114 12 Claims



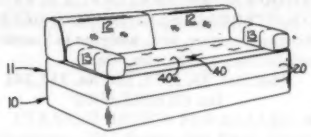
A method and apparatus for disposing of liquid and organic waste in a vehicle wherein the waste is periodically moved by a pump from a holding tank to a heating chamber which utilizes the heat of the vehicle exhaust. In the heating chamber, all bacteria in the waste are vaporized and destroyed by the heat of the vehicle exhaust which converts the waste to a product that is principally steam and which can be harmlessly passed through the remainder of the exhaust system. The pump which conveys the waste from the holding tank to the heating chamber operates only when a combination of two circumstances exist, namely, only when the vehicle is travelling at a speed above a predetermined speed and when the temperature in the heating chamber is above a predetermined tem-

perature. Limiting the operation of the apparatus to those times when the vehicle is moving is also utilized to prevent clogging of the filtered inlet of the pipe which extends into the holding tank so as to employ the agitation of the liquid therein to wash the pipe inlet.

3,740,774
SOFA BED

Lynn L. Powell, Lincolnton, N.C., assignor to Burris Industries, Incorporated, Lincolnton, N.C.

Filed Feb. 9, 1972, Ser. No. 224,772
Int. Cl. A47c *17/14, 27/22*
U.S. Cl. 5—12 R **8 Claims**

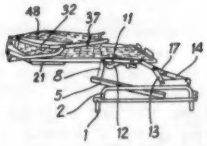


A sofa bed formed of two rectangular blocks of foam hingedly connected together by the covering and readily convertible from a sofa to a single bed or double bed as desired.

3,740,775
PIECE OF FURNITURE ADAPTED TO BE CONVERTED FROM A SEAT INTO A BED

Albert Metayer, Genneteil, France, assignor to Etablissements Metayer & Cie, Sarthe, France

Filed Dec. 15, 1971, Ser. No. 208,103
Int. Cl. A47c *17/14*
U.S. Cl. 5—13 **8 Claims**



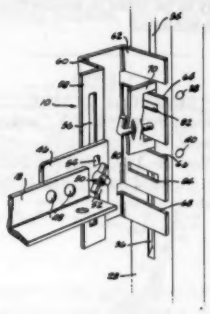
The piece of furniture is adapted to constitute a bed which, in the folded position obtained by an easy maneuver ensuring the locking of the folded elements, presents very reduced overall dimensions. The bed base comprises two head elements followed by an horizontal element, an intermediary element and a final leg element. The locking in the folded position is ensured by side plates each directly pivoted on the intermediary element and, through links, on two legs the maneuver of which is automatically ensured when the bed base is actuated. The leg element comprises a flexible seating to be used in the seat position of the piece of furniture.

3,740,776
HEADBOARD SUPPORT

Alan R. Lazarus, 709 E. Lincoln, Anaheim, Calif.

Filed June 21, 1971, Ser. No. 154,984
Int. Cl. A47c *19/02*
U.S. Cl. 5—296 **3 Claims**

The support is an intermediate connecting structure between a bedframe which has its own self-supporting legs and a headboard which is to be supported by the bedframe. The structure has lateral and vertical adjustability for headboards

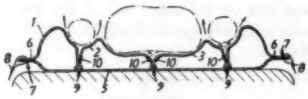


of different widths and heights, and can secure to the headboard by being bolted thereto or by hooking into the conventional crosspins therein.

3,740,777
BED SUPPORT

Colin William Dee, "Greenacres", 64, Canford Bottom, Colehill, Wimborne, Dorset, England

Filed Nov. 27, 1970, Ser. No. 93,185
Claims priority, application Great Britain, Nov. 28, 1969, 58,285/69 Int. Cl. A 47 C 27/08
U.S. Cl. 5—348 **8 Claims**

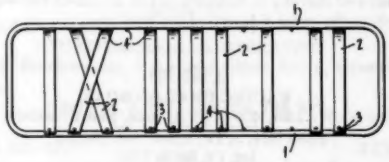


Apparatus for supporting an item, and particularly all or part of the human body, includes a chamber having an upper wall at least part of which is of thin flexible sheet material, e.g. rubber film, adapted when supported by gas pressure in the chamber to define a trough in which the item may lie, means being provided for supplying at a position within the confines of the area of sheet material overlaid by the item an outward flow of gas selected to result in creation and maintenance of a substantially steady laminar flow of gas between the sheet material and the item, to exhaust subsequently to atmosphere.

3,740,778
CARRYING DEVICE FOR MEDICAL AND VETERINARY USE

Donald Alfred Jordan, 53 Bayswater Road, Croydon, Victoria 3136, and Laurence John Hartnett, "Rubra" Watts Parade, Mt. Eliza, Victoria 3930, both of Australia

Filed Mar. 14, 1972, Ser. No. 234,548
Claims priority, application Australia, Mar. 16, 1971, 4326; Nov. 24, 1971, 7155
Int. Cl. A47b *83/04*; A61g *1/02*
U.S. Cl. 5—82 **2 Claims**



A lifting and carrying device comprising a frame and flexible battens having variable attachment means adapted to co-

operate with corresponding means on the frame. The battens are adapted to be tensioned so that substantially equal support is given to all parts of the body. The frame is raised slightly in relation to the body to be lifted to ensure that proper tensioning of the battens is achieved.

3,740,779
SURGICAL DEVICE

Jeanette L., Rubricuis, Brooklyn, N.Y., assignor to Harry H. Leveen, Brooklyn, N.Y.

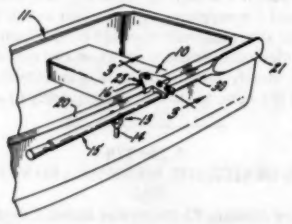
Filed Nov. 26, 1971, Ser. No. 202,294
Int. Cl. B25f 1/04; A61b 17/00
U.S. Cl. 7—14.1 R **9 Claims**

A surgical tool which comprises a surgical scalpel containing on one end thereof a scalpel blade. On the shaft thereof a series of metered markings for the purpose of longitudinal measurement and on the other end of the shaft a device for measuring the circumferential diameter of an orifice or mouth of a tube or duct.

3,740,780
OAR BRACKET

Howard F. Knipple, 2416 Lawndale, Rockford, Ill.

Filed May 12, 1971, Ser. No. 142,558
Int. Cl. B63h 16/06
U.S. Cl. 9—1 R **8 Claims**



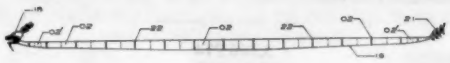
A bracket mountable on an oar includes a support plate with a pin carried by one end of the plate. A U-bolt is fastenable to the other end of the plate and around the oar at its longitudinal center of gravity to hold the bracket on the oar. The pin telescopically interfits with an oar lock socket on the sidewall of a boat with the plate resting across the top edge of the sidewall thereby to hold the oar in an out-of-the-way position along the outer sidewall of the boat.

3,740,781
RACING DRAGON BOAT

Dicksen T. W. Lau, 450 17th Avenue, San Francisco, Calif.

Filed Nov. 3, 1971, Ser. No. 195,157
Int. Cl. B63b 7/04
U.S. Cl. 9—2 S **5 Claims**

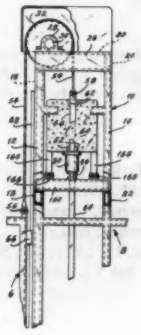
A new racing dragon boat is built of steel, aluminum or synthetic materials in sections which are connected together by bolts and nuts into one piece nearly or over 100 feet long. The hull of the new racing dragon boat is painted with a special colorful pigment which will shine in the bright days as well as in the dark nights when it is illuminated by light.



3,740,782
METHOD AND APPARATUS FOR SERVICING COUNTERBALANCED LIFTING DEVICE

Owen G. Newman, Lemay, Mo., assignor to Sverdrup & Parcel and Associates Inc., Saint Louis, Mo.

Filed Dec. 23, 1971, Ser. No. 211,241
Int. Cl. E01d 15/02
U.S. Cl. 14—42 **14 Claims**



A counterbalanced lifting apparatus includes two weighted members suspended from cables which are trained over sheaves supported in an elevated position on a framework. One of the weighted members may be a bridge span and the other a counterweight. The first weighted member (bridge span) normally seats against a terminal surface while the second weighted member (counterweight) is normally suspended. During operational cycles, the relative positions of the weighted members reverse, and the counterweight may seat on cylinder-type buffers affixed to its underside. Some servicing operations require slack in the cables and this is achieved by seating the first weighted member against its terminal surface and then supporting jacking beams on a temporary support system installed directly beneath the cylinder-type buffers of the second weighted member. Thereafter, a hydraulic pump is connected with the barrels of the cylinder-type buffers and hydraulic fluid is pumped into these barrels to cause the piston rods therein to extend against the jacking beams. This raises the second weighted member and thereby loosens the cables.

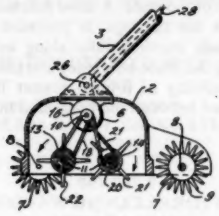
3,740,783
RAKE DEVICE FOR SHAG CARPETS

Louis E. Kopecky, 4th and Downing St., Hollister, Mo.

Filed May 20, 1971, Ser. No. 145,329
Int. Cl. A47l 13/00
U.S. Cl. 15—3 **13 Claims**

A rake device for shag carpets having a housing with a handle thereon so that the rake having teeth can be moved over a shag carpet. The housing contains movable means therein

which are positioned a predetermined distance above the shag carpet and which contact the shag carpet to fluff up the nap.



This device may be used at any time to fluff up the shag rug, including after said rug has been cleaned with a vacuum cleaner.

3,740,784

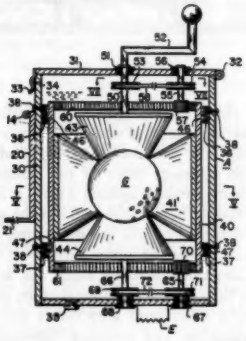
CLEANER DEVICE FOR BALLS

William D. Morrissey, 1961 Bower Hill Road, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 870,275, Oct. 30, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,250

Int. Cl. A63b *47/04*

U.S. Cl. 15—21 A **16 Claims**



A mechanical cleaner device for brush-washing of golf balls and the like having a liquid container for receiving a golf ball is provided with rotatable brush means which defines a central ball-receiving area that is opened and closed by swinging one brush with a top container lid or door into and out of a cooperating position with respect to the other brushes. The device is capable of portable utilization and has an adjustable mounting means for positioning it in a vertically aligned relation, even when carried by a golf bag or cart in an inclined relation. A cylinder is rotatably mounted within the container and serves as a mounting and rotation effecting means for horizontlly disposed brush means. A ball is cleaned within the container by a balanced type of rotation in which brushes of an opposed pair are rotated in the same direction and a right angular disposed brush or brushes of a second pair are rotated right angular disposed brush or brushes of a second pai are rotated in a reverse direction.

3,740,785

HYDRAULIC SEWER PIPELINE CLEANER

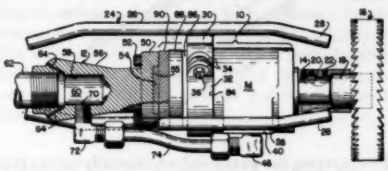
Roy C. Latall, Des Plaines, Ill., assignor to O'Brien Manufacturing Company, Inc., Chicago, Ill.

Continuation of Ser. No. 40,275, May 25, 1970, abandoned. This application July 14, 1971, Ser. No. 190,314

Int. Cl. B08b *9/02*

U.S. Cl. 15—104.12 **9 Claims**

A skid-mounted, jet-propelled, hydraulic, pipeline cleaner which is activated from a stationary high pressure water pumping unit to which it is connected by a flexible hose. A novel skid arrangement of extreme rigidity, a selectively positionable water jet capable of assuming either a propelling position or a tool flushing position, and a jet propulsion system



which is so designed that the jets produced thereby discharge directly into the pipeline void and do not impinge against any portion of the pipeline cleaner as a whole so that no retarding influence is offered to the free forward motion of the cleaner, constitute the salient features of the invention.

3,740,786

DRILL STEM CLEANER

James D. Hall, 405-1275 Haro Street, Vancouver, British columbia, Canada

Filed July 2, 1971, Ser. No. 159,168

Int. Cl. E21b *9/35*

U.S. Cl. 15—104.16 **4 Claims**

Apparatus for cleaning interior walls of a sectionalized drill stem of a rotary drill, the drill having a rotating drilling head to which sections of a drill stem can be secured, the apparatus having a scraper having a sliding fit in a clean drill stem and secured by a cable from the drilling head so that when, during a drilling operation, the drill head is disconnected from an upper end of the drill stem and lifted to add a new drill stem section the scraper is automatically drawn upwards through the upper section of the drill stem so as to scrape the walls of the latter.

3,740,787

SCREEN GUARD FOR GUTTERS HAVING A DUAL PURPOSE MANUAL OPERATOR

Allan H. Bowermaster, Lakewood Circle North, Greenwich, Conn.

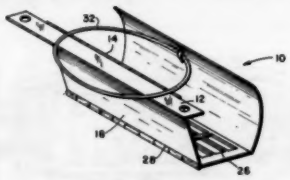
Filed Nov. 1, 1971, Ser. No. 194,707

Int. Cl. E04d *13/06*

U.S. Cl. 15—105 **8 Claims**

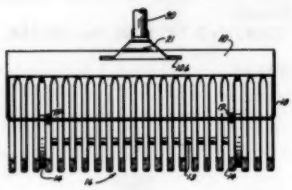
An open-mesh guard for roof gutters which fits over the downspout in the leader and prevents the clogging of the downspout by leaves and other debris. The guard is hinged at two locations in order to permit the device to clear the usual

roof shingle overhang of the gutters when it is desired to empty the same on the ground. A pole is provided for



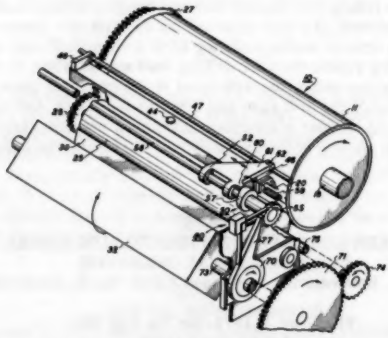
manually emptying the guard and additionally serves the function of scraping the leaves and other debris from the gutters.

3,740,788
SHAG RUG GROOMER
Kenneth D. Kingston, 524 N. 12th Avenue Broken Bow, Nebr.
Filed Oct. 29, 1971, Ser. No. 193,674
Int. Cl. A47l *13/00*
U.S. Cl. 15—142 **1 Claim**



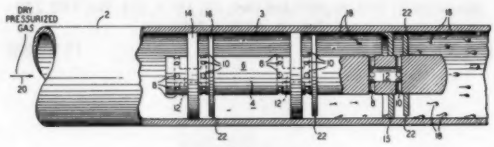
A groomer for shag rugs having two parallel rows of resiliently flexible tines which extend past rug-engaging wheels to rake the strands of the carpet when the device is pushed or pulled across the carpet.

3,740,789
XEROGRAPHIC ROLLER OSCILLATING CLEANING BLADE WITH DRIVE MECHANISM THEREFOR
Raymond G. Ticknor, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Sept. 27, 1971, Ser. No. 183,831
Int. Cl. G03g *13/08*
U.S. Cl. 15—256.53 **6 Claims**



Apparatus is herein disclosed for removing residual dry toner particles from the photoconductive surface of a reusable xerographic plate preparatory to reusing the plate in an automatic xerographic reproducing machine. The apparatus includes an elastomeric doctor blade disposed across the path of movement of the plate and having a cutting edge thereon biased into contact with the photoconductive surface. The blade is supported within a carriage and the carriage arranged to move along a path of travel substantially transverse to the path of movement of the plate. A drive mechanism, operatively associated with the carriage, is provided to periodically reposition the blade incrementally along its path of travel thereby improving the blade efficiency and blade life as well as reducing the possibility of foreign matter from being permanently entrapped between the blade and the photoconductor.

3,740,790
APPARATUS FOR CLEANING WAVEGUIDE AND SIMILAR PIPES
David Nelson Koppes, Bernards Township, County of Somerset. N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 6, 1971, Ser. No. 204,983
Int. Cl. A47l *5/14*
U.S. Cl. 15—312 R **5 Claims**



A device for cleaning waveguide and similar pipes comprises a piston having inlet and outlet gas ports therein joined by passages through the piston and gas seals and gas deflecting means located on opposite sides of the outlet ports. When pressurized gas is introduced against a seal, it is directed into the inlet port, through the passage and out the gas outlet port. The gas is then directed by the gas deflecting means at relatively high velocity along the inner surface of the waveguide thereby driving any contaminants along the waveguide. The high velocity gas flow along the inner surface provides both a moisture absorbing effect and a moisture driving effect for more efficient cleaning. The pressure differential across the gas seal propels the device forward through the waveguide.

3,740,791
CONTROL ARM ASSEMBLY FOR HINGED MEMBERS
Shelly A. Bulin, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.
Filed Apr. 24, 1972, Ser. No. 246,707
Int. Cl. E05d *11/10*
U.S. Cl. 16—139 **7 Claims**

A control arm assembly for hinged members, and including a pair of arms pivotally connected together and with the free ends of the arms being attachable to a hinged member and an anchor point, and with the arms limiting the extent of pivot of the hinged member. The arms serve as either left-hand or right-hand assembly, depending upon arrangement of parts, and one of the arms includes an arcuate slot and the other of the arms has two spaced-apart openings for alternately receiving a bolt which also goes through the slot, and, depending

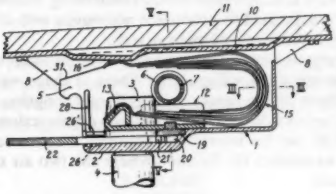
upon which of the two holes the bolt is received in, the arms are either left-hand or right-hand in assembly. The arms may also be fastened together, by means of a threaded knob, so that they can be retained in a selected pivoted position to hold the hinged member in a certain pivoted position.

3,740,792

RESILIENT HINGING DEVICE FOR CHAIRS AND THE LIKE

Per Gunnar Werner, 1460 Spro, Norway

Filed Apr. 6, 1971, Ser. No. 131,781
Int. Cl. E05f 1/12
U.S. Cl. 16—180 **14 Claims**



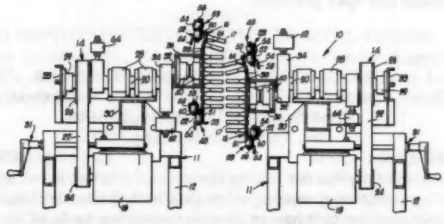
In a resilient hinge for chairs and the like, having an upper hinge part to be attached to the seat or back of the chair and pivoted on a bottom hinge part to be fixed to the bottom frame, with a biased spring member acting therebetween for resiliently opposing backward tilting, the spring member is capable of being displaced radially to the pivotal axis for adjusting the biasing torque, the spring member engaging an entraining slide guided in the fixed hinge part. Movement of the entraining slide is caused by operating a handle on a lever pivoted on an upwardly projecting cone on the fixed hinge part and having teeth engaging a rack guided in the fixed hinge part for motion parallel to the hinge axis and carrying studs engaging oblique slots in the entraining member so as to afford a force-increasing transmission of motion from the lever to the spring member. The handle extends substantially to the edge of the seat so as to be easily accessible. The cone is hollow for matching a column in the bottom frame of the chair. The spring member is composed of leaf springs bent into U-shape opening towards the rear and placed one outside the other. They are in mutual contact at the bend and at the ends of the respective inner springs, with the lengths of the springs increasing from the innermost to the outermost. The lower legs of the leaf springs are bifurcated with diverging inner edges and straddle the cone, and the upper legs have a substantially complementary taper.

3,740,793

FEATHER PICKER HAVING SECTIONAL FINGER SUPPORTS

Robert D. Crawford, and Ralph D. Johnson, both of Kansas City, Mo., assignors to Gordon Johnson Company, Kansas City, Mo.

Filed July 26, 1971, Ser. No. 166,019
Int. Cl. A22c 21/02
U.S. Cl. 17—11.1 **11 Claims**



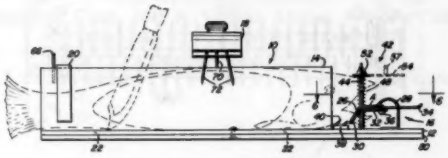
A feather picker having a plurality of fingers mounted on a sectionalized support for removing the feathers from poultry carcasses as they are suspended from a conveyor line. The support comprises a pair of sections in spaced, end-to-end relationship having yieldable structure interconnecting the ends thereof permitting limited relative movement of the sections as they are driven by eccentrics in unison through a predetermined orbital path. The sectionalizing of the finger support with relative movement between the sections serves to minimize as well as make it easier to compensate for the inertial stresses imposed upon the support as it constantly changes direction while moving through its orbital path. Furthermore, the requirement for a perfectly timed drive mechanism to maintain the eccentrics in perfect synchronization is thus eliminated.

3,740,794

FISH FILLET AID

George R. Smith, 54½ E. Market Street, Jamestown, Ohio

Filed Dec. 15, 1971, Ser. No. 208,213
Int. Cl. A22c 25/00
U.S. Cl. 17—70 **12 Claims**



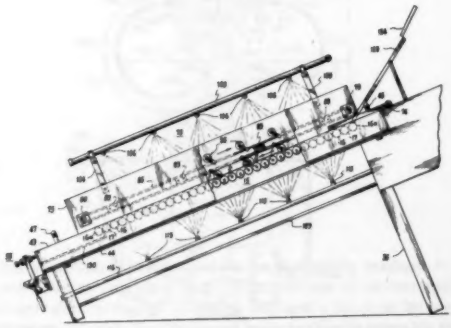
A device for securely holding a fish during the filleting thereof includes an L-shaped base member for supporting the fish in a vertical position and clamps to rigidly hold the fish at its head, body and tail portions to the member. The head clamp comprises depending spring-loaded fingers which cooperate with a plurality of upwardly projecting pins to rigidly hold the lower jaw of the fish. The body clamp includes arcuate arm portions to grasp the backbone or flesh of the fish and hold it securely against the base member. The tail clamp includes a spiked member movable laterally relative to the base member to securely engage the tail of the fish.

3,740,795

SEAFOOD PEELER USING ROLLERS ON AN ENDLESS CONVEYOR AND A BANK OF INCLINED ROLLERS

James S. Cox, Falls Church, Va., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed June 25, 1971, Ser. No. 156,758
Int. Cl. A22c 29/00
U.S. Cl. 17—73 **14 Claims**



Adjoining rollers in an inclined bank rotate in opposite directions. The bank is sprayed with water. Seafood, such as

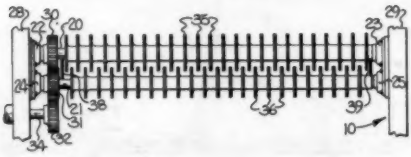
shrimp, is delivered to a crotch between a first and second roller. When the contacting surface between the rollers move downward, they draw the peels through the bottom of the crotch and reject the slippery meat. On the reverse movement of the surfaces, the rejected meat is carried over the second roller to the next crotch. Here the operation of peeling and discharging is repeated, and the shrimp are delivered to successive crotches along the bank. Rollers on an endless conveyor roll over the bank to prevent shrimp from floating down the inclined bank and to press them between the crotches.

3,740,796

APPARATUS FOR PREVENTING SPLITTING OF TEXTILE FIBER LAPS

William L. Blalock, and Marcus G. Whitehurst, both of Gastonia, N.C., assignors to Piedmont Machine Shop, Inc., Gastonia, N.C.

Filed Aug. 3, 1971, Ser. No. 168,597
Int. Cl. D01g *25/00*
U.S. Cl. 19—155 **2 Claims**



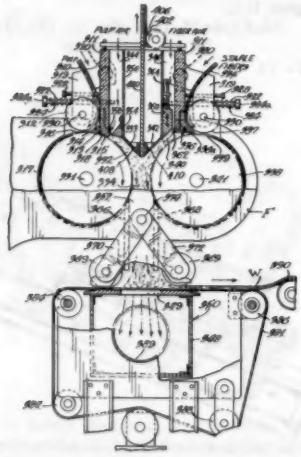
Faults otherwise possibly occurring during the unwinding of a wound lap of compacted textile fiber web are resisted due to the formation in the web of longitudinally extending zones which vary in density across the width of the compacted web. Such zones are brought into being by passage of the web of textile fibers between spaced, interleaved rotating disc members to divert the web into a plurality of longitudinal corrugations immediately prior to compacting of the web between calender rolls.

3,740,797

METHOD OF FORMING WEBS AND APPARATUS THEREFOR

Allan P. Farrington, Englishtown, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 21, 1971, Ser. No. 108,545
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 **17 Claims**



A process and apparatus for forming an air-laid, nonwoven web from separate supplies of individualized fibers, such as textile and papermaking fibers. Supplies of fibers are fed to oppositely rotating lickerins that are rotated at speeds which are optimum for the fibers being individualized by the lickerins. The individualized fibers are doffed from the lickerins by centrifugal force and high velocity air streams directed against the fibers clinging to the lickerin clothing. The fibers from each supply are entrained in their respective air streams, which are impelled at high rates of speed toward each other, and the air streams come together in a mixing zone. The doffed fibers are given an initial trajectory as they leave their respective lickerins, and the inertia of the fibers in the air streams is sufficient to bring the fibers to the mixing zone and effect blending of at least a portion of the fibers from each supply in the mixing zone. In communication with the mixing zone is a suction actuated condensing means where the fibers are deposited to produce a nonwoven web of fibers, for example, an isotropic nonwoven web.

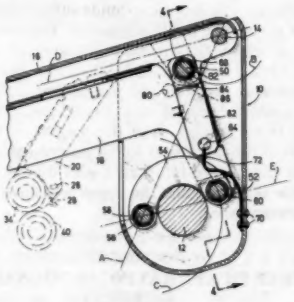
The process and apparatus can be varied to form a variety of nonwoven webs, using as the fibers of these webs two different fibers of the same, or of different lengths. A variable that can be introduced to vary the web construction includes a baffle that can be interposed between the two separate air streams to control the location where the two air streams are intermixed.

3,740,798

APPARATUS FOR MOUNTING CARRIER ARMS IN SPINNING MACHINES

Franz Brichta, Stuttgart-Weilimdorf, and Franz Driesel, Oberweissach, both of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed Mar. 8, 1971, Ser. No. 121,719
Claims priority, application Germany, Mar. 12, 1970, P 20 11 641.0
Int. Cl. D01h *5/46*
U.S. Cl. 19—267 **10 Claims**



The top roller carrier for spinning yarn is mounted within a support and a lever is pivoted at one end to the support. The carrier is pivoted at a first point to the lever, and at a second point to the support. The lever is adapted to raise and lower the arm so that the pivot points move in arcuate paths, into closed and open positions.

3,740,799

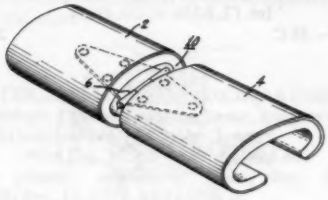
SAFETY SPLICE FOR HANDRAIL BREAK

Henry Leonard Earle, 18 Colgate Road, Maplewood, N.J.

Filed Aug. 3, 1972, Ser. No. 277,808
Int. Cl. B66b *9/14*; F16g *3/00*
U.S. Cl. 24—33 B **6 Claims**

A safety splice for joining the ends of a break in a handrail of an escalator or moving sidewalk where the handrail is a normally endless belt having an outer covering made of molded rubber, comprising flexible means attached to the severed ends and drawing them together but leaving a space

therebetween, a sheet of tough plastic material, shaped to the contour of the molded rubber covering and disposed so as to cover the space between the ends being joined and overlapping them. The plastic material is cemented and stapled to

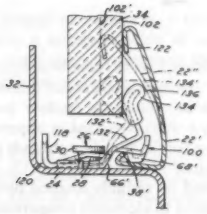


the rubber covering. An outer covering member of relatively thin, flexible plastic material covers the first plastic sheet and is stitched thereto at the edge adjacent the direction of travel of the handrail and is cemented to the first plastic sheet.

3,740,800
FASTENER

Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 35,056, May 6, 1970, Pat. No. 3,670,368. This application June 30, 1971, Ser. No. 158,168
Int. Cl. B60r *13/00*
U.S. Cl. 24—73 HS **8 Claims**



A fastener or adapter for attaching a molding member or the like to a panel surface having a headed button upstanding therefrom, comprising a panel engaging body having means for retaining the molding member tensioned against the panel and an inclined ramp tensioned against the underside of the button head, with a slot in the ramp accommodating the button shank and having there being a seat portion spaced laterally from the slot axis to prevent dislodgment of the fastener from the button once the molding is assembled on the fastener. An arcuately shaped edge on the slot serves to cam the button into the slot seat as the fastener is slid onto the button. One embodiment of the fastener includes a pair of spaced upwardly extending arms interconnected by a glass-engaging means for resiliently retaining an automobile windshield or backlight in position with respect to the panel.

3,740,801
RETENTION OF PRESSURE LINE TO WELL TUBING

Edgar A. Sears, Jr., Whittier, and Harry M. Taylor, Laguna Hills, both of Calif., assignors to Hydril Company, Los Angeles, Calif.

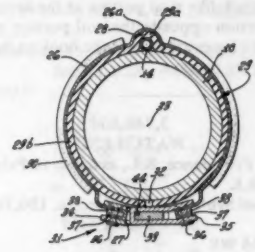
Filed Aug. 23, 1971, Ser. No. 173,997
Int. Cl. F16l *3/22*
U.S. Cl. 24—81 CC **8 Claims**

The invention concerns coupling of a control pressure line to larger diameter well tubing, as by a coupling comprising:

a. a C-shaped metallic retainer body adapted for lateral connection about the tubing,

b. said body forming a longitudinally extending recess,

c. elastomer means at the inner side of the retainer body for reception in said recess to be compressed between the

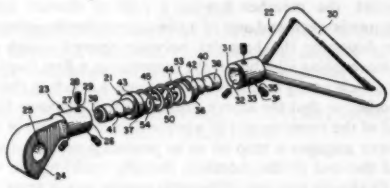


body and the line in response to said lateral connection of the retainer body about the tubing.

3,740,802
OIL WELL SLIP HANDLE

Harold C. Clark, 2446 N. Ventura Avenue, Ventura, Calif.

Filed Apr. 6, 1972, Ser. No. 241,660
Int. Cl. A44b *21/00*
U.S. Cl. 24—263 HA **12 Claims**



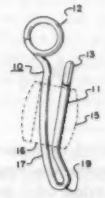
A handle has essentially three parts constituting a flexible, self-aligning, virtually indestructable heavy duty slip handle.

A spring loaded central holding unit has opposite ends formed with bearing raceways that aid in making swivel connections with a removable hand grip and a removable attachment element structured for securement to a slip body. The attachment element and hand grip are interchangeable.

3,740,803
FISHING WEIGHT CLIP

Royce L. Arteburn, 2810 Cedar Street, Baker, Oreg.

Filed Mar. 15, 1972, Ser. No. 234,721
Int. Cl. A44b *21/00*; A01k *95/00*
U.S. Cl. 24—261 R **1 Claim**



This invention is a substantially compressible resilient V-shaped body having a coil-like portion at one of its terminal ends operable to engage a fishing line and a hook at its opposite terminal end. The V-shaped body portion is operable to hold a fishing weight having a hole disposed in the body thereof by the opposing forces exerted by each of the oppos-

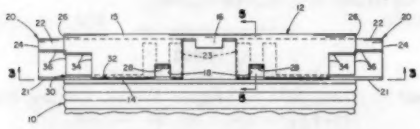
ing legs of the V-shaped body portion of the clip against the peripheral walls of the weight. The body portion comprises a pair of leg portions issuing upwardly at respective opposing angles from a hook-like stop portion at the lowermost portion of the body portion opposite the coil portion at the terminal end of one of the leg portions and the hook at the terminal end of the opposing leg portion.

3,740,804

WATCH END

Paul Levinger, Providence, R.I., assignor to Pale Corporation, Providence, R.I.

Filed Sept. 15, 1971, Ser. No. 180,700
Int. Cl. A44c *5/18*
U.S. Cl. 24—265 WS **7 Claims**



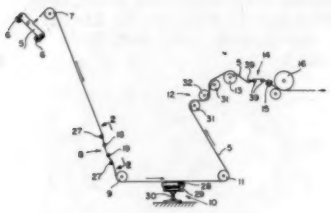
A watch end is provided as a tubular member on the end of a bracelet, the member having a pair of sleeves inserted therein one in each end and of a size to receive therethrough a pin for fastening the bracelet between spaced watch arms, each sleeve being slidable in the member to a first fixed position in which a tang on the sleeve engages a notch in the tubular member so that the sleeve projects a first distance beyond the end of the member and to a second fixed position in which the sleeve engages a stop so as to project a second distance beyond the end of the member, thereby enabling the watch end to fit closely between differently spaced watch arms.

3,740,805

FABRIC EDGE DECURLING AND CONTROLLING APPARATUS

Frank Catallo, Elmont, N.Y., assignor to Fab-Con Machinery Development Corporation, Patterson, N.J.

Filed Nov. 17, 1971, Ser. No. 199,517
Int. Cl. D06c *3/00*
U.S. Cl. 26—54 **10 Claims**



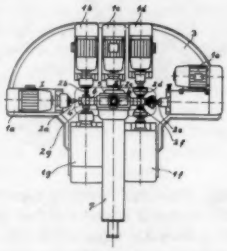
This invention is directed to apparatus for removing edge curl or roll from a continuously advancing fabric web by contacting the respective curled edge portions with oppositely moving flight portions of a single continuously running belt. The apparatus also includes a device for centering the web after its edges have been uncurled and a multiple scroll roll unit, a feed roll and a finger type edge flattener for shaping the web into a fully flattened squared condition as an incident to its introduction into a subsequent processing unit. The multiple scroll roll unit also may be adjusted to remove any skew in the web as it advances therethrough.

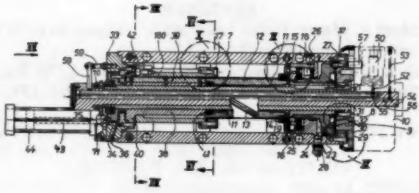
3,740,806

AUTOMATIC TOOL MACHINE HAVING A MULTI-POSITION INDEXING ARRANGEMENT

Emil Karl Witzig, Stuttgart-Weilimdorf, and Rudolf Frank, Ludwigsburg, both of Germany

Filed Mar. 2, 1971, Ser. No. 120,111
Int. Cl. B23b *39/20, 39/22*
U.S. Cl. 29—38 C **20 Claims**





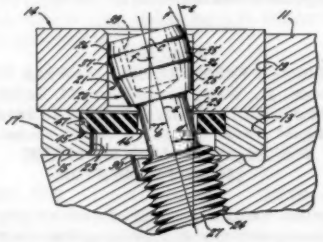
To selectively position a workpiece in indexed position with respect to machine tool heads, a carrier is mounted for rotational movement in an elongated hollow body 7, rotation being transmitted by a shaft 8 placed in approximate indexed alignment by means of inclined spline threads formed thereon which engage a longitudinally moving nut 17. Accurate index positioning is obtained by radially aligned profile positioning faces 30, 31, 32 secured to elements cooperating with the hollow body 7 and the shaft 8, engagement of the profiled faces locking the workpiece carrier in properly indexed position. Movement of the spindle nut, preferably over controllable distances, as well as locking of the shaft in position is obtained by hydraulic cylinder-piston arrangements.

3,740,807

INSERTED BLADE CUTTING TOOL WITH LOCKING PIN

Sidney Arthur Getts, Lake Mills, Wis., assignor to Metal Cutting Tools, Inc., Rockford, Ill.

Continuation-in-part of Ser. No. 185,189, Sept. 30, 1971, abandoned. This application May 25, 1972, Ser. No. 229,429
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 R **21 Claims**



The head of the locking pin is formed with a lower portion which cams the cutting insert edgewise against a pair of locat-

ing walls and with an upper portion which engages the insert to limit bending of the pin after the insert has been pressed against the walls, both portions of the head serving to clamp the insert to an underlying platform. A washer is captivated on the pin and retains a hardened insert-supporting shim on the pin when the latter is loosened to enable replacement or indexing of the insert.

3,740,808

CUTTER, PARTICULARLY FOR GEAR HOBBING

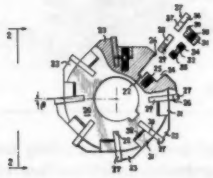
Kazuma Shioya, Yao-shi, Osaka-fu, Japan, assignor to Dijet Industrial Company Limited, Osaka, Japan

Filed Dec. 16, 1971, Ser. No. 208,823

Claims priority, application Japan, Dec. 16, 1970, 45/113348; Dec. 16, 1970, 45/126976

Int. Cl. B26d *1/12*

U.S. Cl. 29—105 R **4 Claims**



The present invention relates to a cutter for gear cutting work, particularly a cutter capable of gear cutting work of high precision, and having throw-away type insert cutter tips which can be replaced easily.

3,740,809

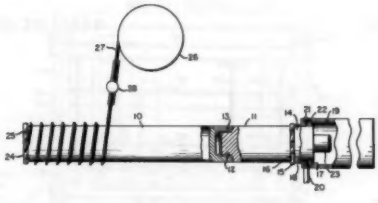
PROCESS FOR FABRICATING CARD CLOTHING DRUMS

Michael John Wolstencroft, Collins Bay, Ontario, Canada, assignor to Du Pont of Canada Limited, Montreal, Quebec, Canada

Filed June 30, 1971, Ser. No. 158,427

Int. Cl. B21d *53/12*; B21h *1/12, 1/14*; B21k *1/02, 1/04*

U.S. Cl. 29—148.4 D **5 Claims**



An improvement in a process for constructing a carding or garnetting drum wherein an extension piece is added to extend the length of a smooth surfaced drum and a number of metallic card clothing wires are wound on the drum and extension piece under tension in a multistart helical configuration to form coils, a space being left between each coil. The wires are clamped to prevent them unwinding, and the coils are compressed together and simultaneously moved onto the drum surface only. The extension piece is removed and the wires are permanently attached to the drum. The application is useful in the preparation of drums suitable for fibrillation.

3,740,810

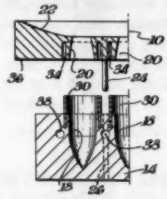
FIXTURE FOR MOLDING AND ASSEMBLING VISCID STICKS

Willis R. Austin, Franklin Square, N.Y., assignor to Pfizer Inc., New York, N.Y.

Filed Oct. 15, 1971, Ser. No. 189,690

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 P **4 Claims**



Tubular sleeves are concentrically mounted about the cavities in the base plate of a two-part mold for sticks of viscid material. The sleeves extend a short distance above the surface of the base plate after the cover plate is removed from it to accurately and dependably guide the applicator tube casings concentrically into engagement about the sticks.

3,740,811

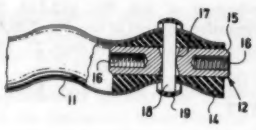
METHOD FOR MANUFACTURING PUMP SPINDLE

Karel Kozusnik, Olomouc, Czechoslovakia, assignor to Sigma Lutin Narodni podnik, Olomouc, Czechoslovakia

Division of Ser. No. 818,715, April 9, 1969, Pat. No. 3,606,789. This application Sept. 4, 1970, Ser. No. 69,963

Int. Cl. B23p *15/00*

U.S. Cl. 29—156.4 **1 Claim**



A pump spindle has a screw-shaped configuration and is in the form of an elongated hollow tube of small wall thickness, carrying at one end a means through which a drive is transmitted to the pump spindle. The tube is given its required configuration by means of pressing jaws which press inwardly against the tube and which are suitably shaped so as to achieve the desired helical configuration for the hollow pump spindle. These jaws are supported not only for axial movement but also for radial movement toward and away from a given axis along which the tube is advanced and around which the tube is rotated, so that by advancing the tube in steps synchronized with the movement of the shaping jaws there will issue from an apparatus for manufacturing the pump spindle a tube of required configuration from which a section of predetermined length can be cut. Thereafter, a connecting means is fastened to one end of the thus cut tube to be able to transmit a drive to the tube through the connecting means.

3,740,812

METHOD OF MAKING EXPANDED METAL PRODUCTS

Trevor B. Ryan, Rose Park, Australia, assignor to Jury & Spiers Proprietary Limited, Norwood, Australia

Filed Aug. 18, 1971, Ser. No. 172,763

Claims priority, application Australia, Aug. 24, 1970, PA2297/70

Int. Cl. B23p *17/00*

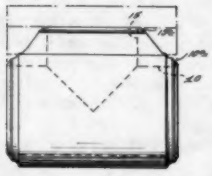
U.S. Cl. 29—155 C **7 Claims**

A post comprising a series of struts radiating outwardly from a central portion produced by a method of firstly extrud-

ing ductile metal to a constant cross-sectional shape which includes a central portion and at least three circumferentially spaced webs, punching a plurality of rows of slots in each web, arranging the lengths of the slots to be great compared with

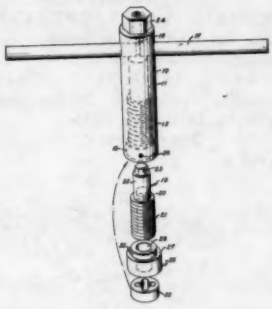
the distance between them and arranging the slots to be staggered, then stretching the metal between the slots of the rows so as to form a series of struts, the unpierced metal of the product constituting the chords of the trusses so formed.

3,740,813
METHOD OF MAKING A CONNECTOR TEE FOR PRESSURE PIPE LINES
Charles H. Moore, 645 Matanzas Court, Fort Myers Beach,
Continuation-in-part of Ser. No. 142,744, May 12, 1971, which is a continuation-in-part of Ser. No. 720,658, April 11, 1968, abandoned. This application Sept. 21, 1972, Ser. No. 291,040
Int. Cl. B21d *53/00;* **B21k** *29/00;* **B23p** *15/00*
U.S. Cl. 29—157 T **2 Claims**



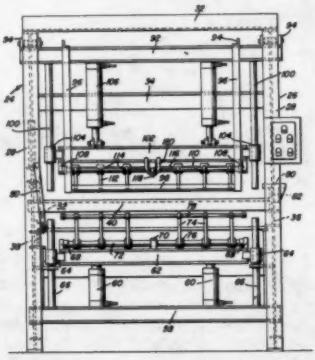
Metallic connector Tees for pressure pipes of the larger sizes and wall-thicknesses, which cannot be efficiently and economically made from pipe, and which heretofore have been made by relatively expensive block forging methods, are made by heating a solid metal work-piece of round cross section and appropriate size to forging temperature; peripherally confining the heated solid metal workpiece; and hollow-punching it in axially offset relationship with respect thereto in such manner as to provide a selected wall portion which is sufficiently thick as to permit the formation of the branch pipe passages therein while still retaining sufficient metal to compensate by way of reinforcement for the weakening of the wall caused by the formation of said passages, and without reducing the thickness of the opposite portion of the wall of the work-piece below a predetermined point.

3,740,814
STUD EXTRACTOR
Calvert D. Marshall, 307 S. Broadway, Georgetown, Ky.
Continuation-in-part of Ser. No. 6,522, Jan. 28, 1970, abandoned. This application June 3, 1971, Ser. No. 149,578
Int. Cl. B25b *13/50;* **B23p** *19/00*
U.S. Cl. 29—200 D **10 Claims**



A hand-operated device for extracting studs from engine blocks or the like embodies an internally screw-threaded body portion having a turning handle means. An intermediate adapter has external and internal threads which enable the adapter to be screwed into the body portion and over the screw threads of an anchored stud. An abutment collar or spacer is interposed between the face of the member in which the stud is anchored and the opposing end of the rotatable body portion. The device has the additional capability of extracting studs which have been broken off above or below the face of the member which holds the studs.

3,740,815
PALLET STRINGER PULLER
Thomas G. Campbell, 9253 Garland Drive, Savannah, Ga., and James A. Purvis, Savannah, Ga., assignors to said Campbell, by said Purvis, a part interest
Filed Sept. 13, 1971, Ser. No. 179,639
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 D **12 Claims**



An assemblage for totally or partially dismantling the deck boards and/or runners of conventional wooden pallets whereby the deck board or runners, when damaged, may be replaced to renew the strength and life of a wooden pallet.

3,740,816
APPARATUS FOR AUTOMATICALLY STAKING TERMINALS

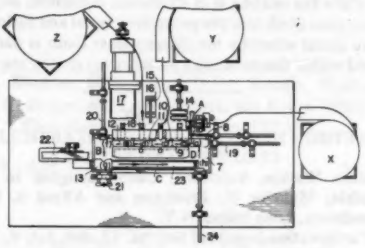
Kiyokazu Yamaoto, Minami-ku, Kyoto; Yoshihisa Uchida, Neyagawa-shi; Masato Tanino, Higashisumiyoshi-ku, Osaka, and Yunori Koga, Kadoma-shi, all of Japan, assignors to Matsushita Electric Industry Co., Ltd., Osaka, Japan

Filed Mar. 2, 1971, Ser. No. 120,299

Claims priority, application Japan, Mar. 6, 1970, 45/19558; Mar. 6, 1970, 45/19559; Mar. 6, 1970, 45/19560; Mar. 6, 1970, 45/2218; Mar. 6, 1970, 45/2219

Int. Cl. H01k *13/04*

U.S. Cl. 29—203 B **6 Claims**



Apparatus for automatically staking terminals to a base plate including a feed mechanism which feeds a plurality of jigs, in cyclic fashion, to several work stations. At the first work station apparatus is provided which removes a base plate from a supply and positions the plate within a jig. The jig is then moved to a second station where a mechanism removes terminals from a supply and inserts them in holes in the base plate. At the next station the jig is aligned with a pressing tool for staking the terminals to the base plate. At the last work station, apparatus removes the base plate having the staked terminals from the jig. The feed mechanism then moves the empty jig to the first work station in preparation for reception of another base plate.

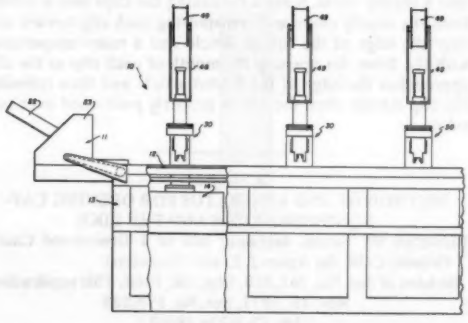
3,740,817
COMPONENT INSERTION SYSTEM FOR CIRCUIT BOARDS

Gerhard H. Weiler, Des Plaines, and Patrick M. Donavan, Schaumburg, both of Ill., assignors to Weiler Engineering Inc., Elk Grove Village, Ill.

Filed Apr. 20, 1971, Ser. No. 135,550

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 B **24 Claims**



A component insertion system which is a completely computerized, automatic system that can be programmed to automatically assemble a pre-determined number of printed circuit boards.

The system is generally an inline system in that the printed circuit boards are transported from one station to another by means of an inline conveyor, however, its component insertion heads and their associated clincher assemblies are movably mounted, rather than being fixedly positioned as in the past. In the present system, the component insertion heads and the clincher assemblies each are mounted on X-Y tables so as to be movable with respect to the printed circuit boards. In addition, the component insertion heads and their associated clincher assemblies are rotatably mounted and controlled so that they may be angularly oriented with respect to the printed circuit boards. With this arrangement, a component can be affixed to a printed circuit board in virtually any pre-determined location.

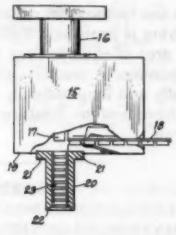
3,740,818
ADAPTER FOR PIERCE NUT APPLYING TOOL

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.

Filed Oct. 26, 1971, Ser. No. 192,270

Int. Cl. B23q *7/10*

U.S. Cl. 29—211 D **10 Claims**



An improvement upon a pierce-nut application tool which enables the tool to apply a pierce nut to a recessed, flanged or specially formed workpiece in which the point of application of the pierce nut is below the normal working plane of the tool. The improvement includes an extension on the tool which fits into the recess and feeds the nuts to the off-planar location. The nuts are accumulated in the extension and the accumulated nuts serve to transmit the nut-applying force from the punch in the tool to the nut to be applied.

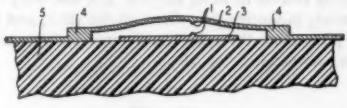
3,740,819
METHOD OF REDUCING THE INCIDENCE OF SHORT CIRCUITS ON AIR-ISOLATED BEAM CROSSOVERS

Daniel Babusci, Oceanport, and Burton Abram Unger, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 99,998

Int. Cl. B22d *19/10*; **B23p** *7/00*

U.S. Cl. 29—401 **6 Claims**

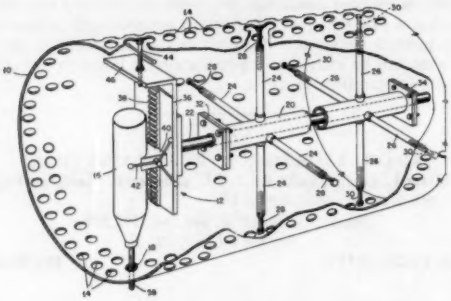


Deposited thin film circuitry having a large number of air-isolated crossovers is treated to reduce potential rejects because of crossover short circuits by causing the evolution of gas within a liquid in the region under the crossovers at a rate sufficient to lift the crossover beams without fracture, as by the reaction of a dilute acid with a bicarbonate or by the vigorous boiling of a volatile liquid such as alcohol, acetone or xylene, or by expanding initially liquid materials under the beam. The effectiveness is enhanced by a preliminary heating of the crossovers to a temperature above about 250°C.

3,740,820
METHOD OF REPAIRING DAMAGED HOLES IN A BOILER DRUM

Robert J. Tarves, Jr., P.O. Box 282, 260 Erial Road, Blackwood, N.J.

Filed Jan. 28, 1971, Ser. No. 110,404
Int. Cl. B22d 19/10
U.S. Cl. 29—401 7 Claims



Apparatus and methods for repairing or producing openings in a boiler drum is provided. Weld material is applied to the drum in the area of the openings to reduce substantially the size of the openings. A precisely aligned drill within the drum is then radially and longitudinally moved in steps is inserted within the drum and to produce or redimension openings within the drum.

3,740,821
METHOD FOR ASSEMBLING CONFECTION-SERVING CONTAINERS OF THE PUSH-UP TYPE

Hans D. Von Bredow, Galena, Ohio, assignor to Big Drum, Inc., Columbus, Ohio

Filed Nov. 5, 1971, Ser. No. 196,156
Int. Cl. B23q 17/00; B23p 19/04, 11/02
U.S. Cl. 29—407 4 Claims

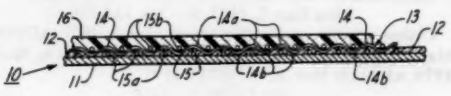
A method for assembling a push-up type serving container consisting of three parts, namely, a tubular container body or cylinder for a confection or other edible substance, a piston for pushing the confection upwardly to expose it at the upper open end of the cylinder, and a separate actuating rod which fits into a downwardly-opening socket at the lower side of the piston and extends downwardly through the lower end of the cylinder. The tubular container body also has axially spaced piston-stop ribs on its inner surface. The assembly is made by successively mounting the piston on the stick, and then moving the piston into the tubular container body to angle it into position between the stop ribs.

3,740,822
METHOD OF MAKING PROTECTED METAL ARTICLE

Fred G. Singleton, Pittsburgh, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Division of Ser. No. 795,845, Feb. 3, 1969, Pat. No. 3,615,276. This application Apr. 12, 1971, Ser. No. 133,148
Int. Cl. B23k 31/02; B23p 17/00
U.S. Cl. 29—419 2 Claims

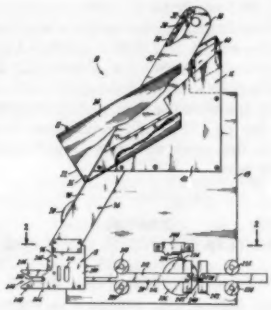
A protected metal article is produced by combining a core of sheet steel with a protective metal consisting essentially of zinc; thereafter impressing a fibrous glass cloth into the protective metal and applying a weather-resistant outer coating applied to the fibrous glass cloth. The fibrous glass cloth may comprise either a glass fiber thread woven fabric or a bonded mat formed from randomly oriented continuous glass fiber filaments. The article is prepared by applying a molten protective metal coating consisting essentially of zinc to a steel sheet and, while the coating is in its molten condition, impressing a fibrous glass cloth into the protective metal and fusing the protective metal whereby the fibrous glass cloth is partially embedded within the protective metal.



3,740,823
METHOD FOR CLIPPING FOLDED ARTICLES OF CLOTHING AND THE LIKE

Theodore Watkin, Stamford, Conn., assignor to Theodore Watkin; Maurice W. Friedman and Alfred S. Friedman, Woodmere, Long Island, N.Y.

Continuation-in-part of Ser. No. 53,409, July 9, 1970, abandoned. This application July 1, 1971, Ser. No. 158,772
Int. Cl. B23p 19/00; B23q 7/10
U.S. Cl. 29—429 3 Claims



A method is provided for placing spring clips over the edges of folded articles and the like in an automated manner. The method operates through an apparatus which generally includes a slide for properly orienting the clips and loading them into a supply chute, a drive for taking the clips one at a time from the supply chute and transporting each clip toward and over the edge of the folded article and a ramp cooperating with the drive, for opening the mouth of each clip as the clip approaches the edge of the folded article and then releasing the clip mouth when the clip is properly positioned over said edge.

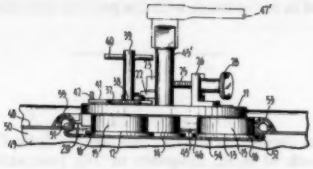
3,740,824
METHOD OF AND APPARATUS FOR OPENING CAP-EQUIPPED DRUMS AND THE LIKE

Llewellyn W. Evans, deceased, late of 1 Greenwood Court, Orinda, Calif. (by Agnes J. Evans, Executrix)

Division of Ser. No. 761,350, Sept. 20, 1968. This application Nov. 15, 1971, Ser. No. 198,888
Int. Cl. B23p 19/00
U.S. Cl. 29—426 7 Claims

Method of and apparatus for opening drums and other containers by removing the closure caps from the filler openings thereof. Typically, such a filler opening is located in the top

wall or head of the drum, and it is an annular rim-equipped opening through which the closure cap extends and within



which it is confined by laterally extending annular flanges respectively disposed inside and outside of the drum on opposite sides of the rim.

3,740,825

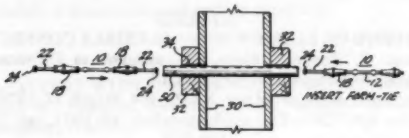
METHOD OF INSTALLING FORM-TIES

Frank E. Buyken, 8620 Island Drive, Seattle, Wash., and Robert C. Foster, 403 Laurel Street, Elk Grove Village, Ill.

Filed Mar. 18, 1971, Ser. No. 125,755

Int. Cl. B23p *19/04*

U.S. Cl. 29—433 **3 Claims**



A method of installing form-tie rods in a pair of substantially aligned holes in an opposed pair of spaced-apart concrete forms is disclosed to comprise the steps of inserting and visually aligning a hollow or tubular member in said holes, then the step of withdrawing the tubular member from the holes in one direction or the other while the tubular member leads or guides a form-tie through the holes.

3,740,826

METHOD FOR PRODUCING COMPOSITE METALLIC PIPE BY EXPLOSION PRESSURE WELDING

Nobuyoshi Baba, Shiga, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 17, 1971, Ser. No. 153,998

Claims priority, application Japan, July 2, 1970, 45/57256

Int. Cl. B23k *21/00*

U.S. Cl. 29—470.1 **5 Claims**

A composite metallic pipe is produced by explosion pressure welding, that is, by filling a thermoplastic material capable of being converted into a fluid when heated, and solidified at the ambient temperature, for example, asphalt compound or tar pitch, at the outside of an outer pipe when an explosive is charged at the inside of an inner pipe, or at the inside of an inner pipe when the explosive is charged at the outside of the outer pipe, thereby to integrate the pipe with the plastic material and increase the strength of the pipe such that the pipe acts as an incompressible steel rod or an outer pipe having a large wall thickness against detonation pressure and prevent deformation of the pipe. A pipe having a wall thickness of 1 mm or less as a substrate can be advantageously welded to a composite pipe by explosion pressure.

3,740,827

FRICTION WELDING

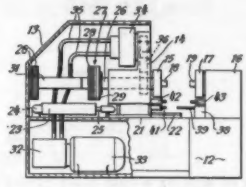
Anthony John Hunter, and Robert Graham Forbes, both of Inverness, Scotland, assignors to A. I. Welders Limited, Inverness, Scotland

Filed Nov. 6, 1970, Ser. No. 87,373

Claims priority, application Great Britain, Nov. 14, 1969, 55,895/69

Int. Cl. B23k *27/00*

U.S. Cl. 29—470.3 **7 Claims**



The disclosure provides an improved method of carrying out friction welding operations in which the workpieces are heated by friction produced by rotating one in rubbing contact with the other. The rotation of the one workpiece is effected by a drive from a power source until an equilibrium temperature condition has been reached, after which the power source is disconnected and continued rotation applied to the workpiece by energy stored in a rotating mass, the energy in said mass being dissipated in completing the weld.

3,740,828

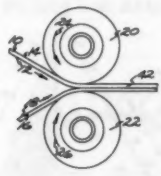
METHOD FOR MAKING STAINLESS STEEL-ALUMINUM COMPOSITE MATERIAL

Joseph J. Buchinski, Wrentham, and Charles H. Zenuk, Acton, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 28, 1971, Ser. No. 148,059

Int. Cl. B23k *21/00*

U.S. Cl. 29—470.1 **5 Claims**



A process for metallurgically bonding stainless steel to aluminum at room temperature to provide a composite material having excellent formability properties and having a high quality stainless steel surface finish is shown to include the steps of squeezing strips of stainless steel and aluminum materials together between pressure bonding rolls while driving one roll in engagement with the stainless steel material at a

selected peripheral speed, preferably without use of a lubricant between the roll and stainless steel material, and while regulating rotation of the other roll in engagement with the aluminum material at a relatively slower peripheral speed for reducing the thickness of at least the aluminum material to an extent sufficient to form incipient solid-phase metallurgical bonds between the materials, the bonded materials then being sintered in the solid-phase for increasing the strength of the metallurgical bonds between the stainless steel and aluminum materials.

3,740,829

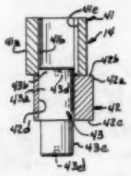
METHOD OF MAKING A CAM SHAFT WITH A SHAFT COUPLING AND ARTICLE PRODUCED THEREBY

Donald L. Yarger, 22511 W. Grant, Marengo, Ill.

Filed Oct. 15, 1971, Ser. No. 189,495

Int. Cl. B23k *31/02*

U.S. Cl. 29—470.5 **6 Claims**



A method of making a cam shaft having a trunnion at one end of the cam and a blind end shaft coupling internally of the trunnion for connection to an external shaft wherein a coupling member is formed with a cylindrical outer bearing surface and an internally keyed bore extending therethrough dimensioned for connection to an external keyed shaft, a cam member is formed with a shaft stub extending from one end face eccentric to its peripheral cam surface, and the coupling is thereafter assembled on the shaft stub and brazed to the end face of the cam to form a trunnion at the end of the cam having a blind end shaft coupling internally of the trunnion.

3,740,830

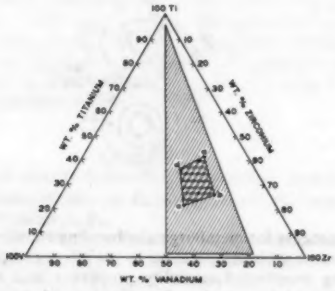
BRAZING CERAMICS

Albert Evan Campbell, Jr., and Andrew O. Jensen, both of Arcadia, Calif., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 861,976, Sept. 29, 1969, Pat. No. 3,666,429, which is a continuation-in-part of Ser. No. 646,186, June 15, 1967. This application Mar. 13, 1972, Ser. No. 234,435

Int. Cl. B23k *31/02*

U.S. Cl. 29—472.7 **12 Claims**



A process for metallizing high purity ceramic parts and/or brazing a high purity ceramic part to a refractory metal part or another ceramic part using a ternary titanium, vanadium, and zirconium alloy is described. A particularly efficacious alloy comprising 21–42 percent titanium, 15–33 percent vanadium and 36–54 percent zirconium yields hermetic seals when parts are bonded in accordance with the process described herein.

3,740,831

SOLDERING FLUXES

David Paul Jordan, Warwick, and George John Collini, Vails Gate, both of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed July 28, 1971, Ser. No. 167,025

Int. Cl. B23k *35/36;* **C23c** *1/17;* **C07d** *33/50*

U.S. Cl. 29—495 **20 Claims**

Flux compositions include as flux activators hydrazinium salts of certain organic chelaters which have a nitrogen atom and a phenolic OH group in bidentate relation. The fluxes are suitable for use in soldering nickel and nickel alloys as well as copper and copper alloys.

3,740,832

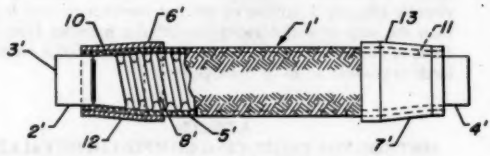
METHOD OF FABRICATING A FLEXIBLE CONNECTOR

George G. Toepper, Elgin, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 23,354, March 27, 1970, Pat. No. 3,627,354. This application Nov. 18, 1971, Ser. No. 199,973

Int. Cl. B21d *39/00;* **B23p** *11/02*

U.S. Cl. 29—508 **10 Claims**



Method of fabricating a flexible connector. A tubular member, is corrugated in a central portion thereof and a sleeve of braided strands is disposed around the tubular member to encompass the corrugated central portion and overlap at least a part of the uncorrugated end portions. A collar is disposed in a force fit manner around each end of the sleeve to overlap the part covering an uncorrugated end portion to thus secure the sleeve in place and provide reinforcement for the corrugated portion of the tubular member.

3,740,833

METHOD AND APPARATUS FOR PROVIDING A HARD METAL COATING ON CONFINED AREAS OF A METAL PART

Charles A. Hanson, and Leroy C. Cowles, both of Long Beach, Calif., assignors to Pacific Valves, Inc., Long Beach, Calif.

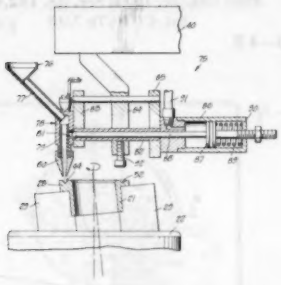
Filed Feb. 24, 1970, Ser. No. 13,674

Int. Cl. B23p *25/00*

U.S. Cl. 29—527.4 **7 Claims**

A metal part to be clad is conveyed past a plurality of treating stations arranged along a definite path. At the first station, the metal part has the surface on which the coating or cladding is to be applied machined to include a receiving

groove. The part is then transported to the next station where a suitable hard cladding material in particulate form is deposited onto the specially machined area of the metal part.



The part is then heated to where the temperature of the coating material is raised sufficiently to melt it, then the metal part is moved to a finishing station where the coating is machined to prescribed dimensions and surface condition.

3,740,834

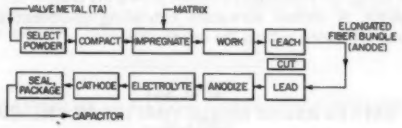
CAPACITOR WITH FIBERED VALVE METAL ANODE

Richard W. Douglass, Needham, Mass., assignor to Norton Company, Worcester, Mass.

Continuation of Ser. No. 839,024, July 3, 1969. This application Nov. 15, 1971, Ser. No. 199,065

Int. Cl. H01g *13/00*

U.S. Cl. 29—570 **11 Claims**



Capacitor anodes are produced in situ by sintering a powdered valve metal into a porous compact, impregnating the compact with another material in fluid or soft form which fills the pores of the compact, solidifying or hardening the second material and working the compact through the application of compressive forces to elongate it to thereby fiber the powders of the compact and to fiber the impregnant. The thus produced fiber compact is leached to remove the impregnant materials, to produce a bundle of interconnected fibers with an interconnected pore structure which can be filled with anodizing medium and later with electrolyte to comprise the capacitor. Alternatively, the impregnant can be the valve metal and the original compact can be removed after elongation and fibering.

3,740,835

METHOD OF FORMING SEMICONDUCTOR DEVICE CONTACTS

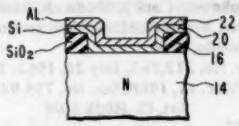
David M. Duncan, San Francisco, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, Long Island, N.Y.

Continuation of Ser. No. 683,363, Nov. 15, 1967, abandoned. This application Aug. 31, 1970, Ser. No. 68,466

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **5 Claims**

A semiconductor device contact is made by depositing a layer of semiconductor material in the contact opening of an insulating mask, metallizing, and heating to bond the metal to the layer of deposited semiconductor material and to the



original device surface for permitting greater ease of contacting shallow junctions.

3,740,836

METHOD OF PRODUCING A CORELESS ARMATURE

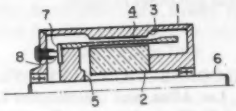
Shoji Kumada, and Tadashi Tanaka, both of Iruma, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Fukuoka-ken, Japan

Filed Sept. 28, 1971, Ser. No. 184,473

Claims priority, application Japan, Sept. 28, 1970, 45/85678

Int. Cl. H02k *15/02, 15/10*

U.S. Cl. 29—598 **1 Claim**



A coreless armature and a method for producing the same, characterized in that, on the outer surface of an annular body, a plurality of teeth-like projections are provided with equal spacing therebetween and in a manner extending along the generatrices of the annular body from a base part thereof, effective parts of armature coils are inserted evenly in the slots formed between the teeth-like projections, and the entire assembly is thereafter impregnated with a synthetic resin for solidifying the assembly into an integral body. The base part of the annular body from which the plurality of teeth-like projections project may be removed thereafter from the thus solidified armature assembly.

3,740,837

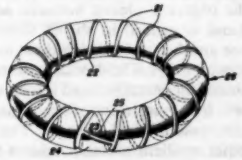
PROCESS FOR MAKING A TOROIDAL INDUCTANCE COIL

Ralph O. Robinson, Jr., Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Division of Ser. No. 266,948, Jan. 17, 1952, abandoned, and a continuation-in-part of Ser. No. 543,285, Oct. 27, 1955. This application Apr. 2, 1954, Ser. No. 429,995

Int. Cl. H01f *7/06*; **B33p** *17/00*

U.S. Cl. 29—602 **6 Claims**



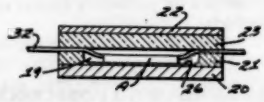
1. The process of making a toroidal inductance coil, comprising producing a thin single layer conductive tube shaped as a toroid, converting said tube into a toroidally wound strip by severing it along a helical line, and severing said strip transversely to provide two electrical terminals for said inductance coil.

3,740,838

HERMETIC PACKAGES AND METHODS OF FABRICATING SAME

George B. Brookover; Carl J. Hudecek, both of Toledo, and John H. Oliver, Maumee, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 212,563, July 26, 1962. This application Mar. 11, 1968, Ser. No. 735,940
Int. Cl. H05k 5/06
U.S. Cl. 29—627 9 Claims



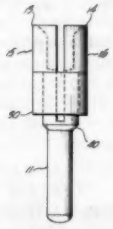
A method of making hermetically sealed packages for small electronic devices in which a pair of metal plates having low melt glass on the facing surfaces has the perimetrical edge of one of the plates conductively heated to effect fusion of the glass and a final hermetic seal. One of the metal plates is preferably thicker than the other and heat to fuse the glass is conductively applied to the thinner plate while heat is carried away from the thicker plate. Consult the specification and drawings for details and other features.

3,740,839

CRYOGENIC CONNECTION METHOD AND MEANS

Richard F. Otte, Los Altos, and Christopher L. Fischer, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed June 29, 1971, Ser. No. 157,890
Int. Cl. H01r
U.S. Cl. 29—628 16 Claims



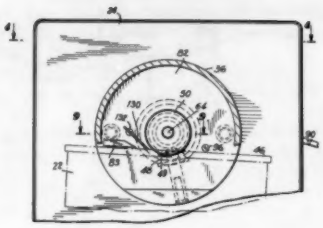
A reusable connecting device is disclosed which utilizes a heat recoverable metallic band disposed about a resilient member such as the tines of a forked member. Where the resilient member is a forked member, the forked member has at least two tines which are spaced from one another and which are elastically mounted so that they can be moved inwardly but, when so moved, exert an outward force. When it is desired to make a connection between this device and other objects, the object is placed between adjacent tines and the metallic band is caused to shrink thereby forcing the tines towards one another and causing them to contact and hold the object between them. The device is reusable in that when the temperature of the metallic band is lowered to cause the metal to transform to a martensitic state, it may be easily deformed due to a decrease in yield strength. The elastic nature of the tines or other resilient member causes them to push against the band resulting in a deformation of the band. This deformation permits the tines to move away from one another and releases the object held therebetween. However, once the metallic band is heated to a temperature at which the band reverts to its austenitic state, the band again contracts and moves the tines toward one another permitting a strong electrical or physical connection to be made.

3,740,840

ELECTRIC CAN OPENER WITH CAN SENSING MEANS

Vincent H. McLaren, Jr., Cumberland, and Navnit Panchal, Riverside, both of R.I., assignors to Imperial Knife Associated Companies, Inc., New York, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,400
Int. Cl. B67b 7/38
U.S. Cl. 30—4 R 11 Claims



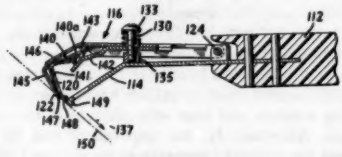
An electric can opener having a rotatable cutter which cuts through and around a seaming (outer) wall of a double seam (chime) by which a can end is secured to a can body. The rotatable cutter and a tractor wheel turn about axes which are substantially perpendicular to each other. The tractor wheel can be axially shifted by manual movement of an operating lever. The tractor wheel has a conical surface disposed to engage a chuck (inner) wall of a chime and a cylindrical surface disposed to engage the top of a chime. Associated with the cutter is a shoulder wheel that rides on the outside of a can below a chime so that the can opener will hold a can after a seaming wall is cut entirely around a can and until a can is deliberately released by axially shifting the tractor wheel out of engagement with a chime. A first abutment above a chime and ahead of the tractor wheel (the direction of rotation of a can being the reference) extends forwardly from a can opener housing. A second forwardly extending abutment above a chime is located behind the tractor wheel.

3,740,841

SAFETY RAZOR EMBODYING BLADE PRESSURE CONTROL

Frederick L. Risher, Laurel, Miss., assignor to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 29,788, April 20, 1970, abandoned. This application Mar. 25, 1971, Ser. No. 128,077
Int. Cl. B26b 21/14, 21/52
U.S. Cl. 30—32 11 Claims

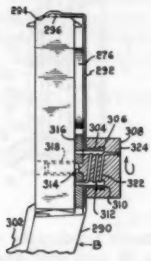


The disclosure introduces a new concept in safety razor construction; that of the floating head. A floating head is herein defined as a blade support assembly which is mounted for movement transverse to the path of movement undergone by the pressure guard. A safety razor utilizing a floating head construction of the type herein described is insensitive not only to variations in the application of handle pressure but also to the angle at which the razor is held relative to the skin. A biased blade support assembly, comprising the floating head, is mounted for controlled pivotal movement toward and away from a skin pressure guard integral with the razor handle whereby a constant blade pressure will be exerted on the skin irrespective of the pressure exerted on the handle and pressure guard.

3,740,842
RAZOR CARTRIDGE AND HOLDER THEREFOR

Keith T. Bleuer, 1663 Wilshire Drive, N.E., Rochester, Minn.

Filed Mar. 8, 1971, Ser. No. 121,712
Int. Cl. B26b *21/26*
U.S. Cl. 30—40.1 11 Claims

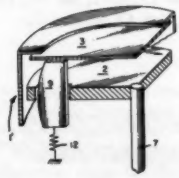


A cartridge which contains a razor band and which is reversible in its holder so that both edges of the band may be used for shaving purposes. The cartridge has ridges or bosses for protruding through openings provided in the band midway of the band edges for holding the band in proper shaving position in the cartridge and allowing the band to be moved over the ridges into successive shaving positions. The band is wound on and from a pair of rolls in the cartridge which are of different circumference than a shaving length of the blade so that the rolls can be used for counting the blade lengths used. The holder includes direct drive means for one of the rolls for causing this roll to be used for blade take-up and a gear meshable with a gear on the other roll so that the latter roll can be used for blade take-up.

3,740,843
SHAVING HEAD HAVING SEPARATELY SPRUNG BLADES

Eduard Willem Tietjens, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,502
Claims priority, application Netherlands, Mar. 25, 1970, 7004336
Int. Cl. B26b *19/14*, *19/38*
U.S. Cl. 30—43.6 9 Claims

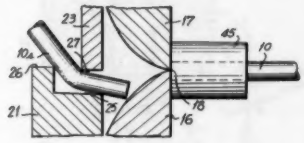


The invention relates to a shaving head for a dry-shaving apparatus comprising a circular shear plate and a cutter member which co-operates with the shear plate and has at least one separately sprung blade the body of which is arranged so as to be movable in an opening in a rotatably drivable blade carrier; in operation the cutting edge of the blade, which edge extends substantially in a radial direction, resiliently engages the shear plate, which is spaced from the blade carrier.

3,740,844
WIRE CUTTING PLIERS

James M. Rubin, 141 W. 17th Street, New York, N.Y.

Filed Mar. 3, 1971, Ser. No. 120,568
Int. Cl. B26b *17/00*
U.S. Cl. 30—124 1 Claim

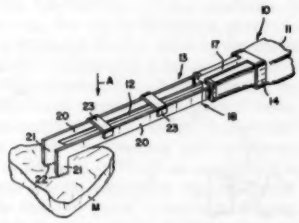


Wire cutting pliers especially suitable for use in the art of orthodontics in which the orthodontist is often required to cut wires in the patient's mouth. The wire cutting pliers are provided with portions which grip the severed end of the wire and hold or retain it firmly so that it is removed with the plier.

3,740,845
MECHANICAL KNIFE WITH HOLDING MEANS

Larry Klein, 3856 Bronx Boulevard, Bronx, N.Y.

Filed July 26, 1971, Ser. No. 166,068
Int. Cl. B26b *7/00*
U.S. Cl. 30—136 5 Claims



A stabilizing and guiding attachment for an electric knife has a pair of members extending longitudinally along and flanking the knife blade. A holding element, which clamps to the knife body, is attached to these members by means of a spring-biased hinge or a resiliently flexible ligature so that the two members can deflect jointly upwardly away from the cutting edge of the blade and thus in the direction opposite the direction in which the blade is passed through the article to be severed. The members are formed at their ends remote from the knife body with teeth engageable with an object to be cut so that, as the knife blade is brought into engagement with the object, the teeth first engage the object and then bear on it to immobilize this object and stabilize it during cutting. The members can constitute the sides of a U-section channel or they can be separate strips transversely joined at several locations so that both sides of the cutting kerf are engaged.

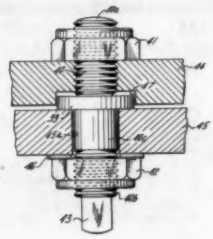
3,740,846
SHEARS HAVING CLEARANCE ADJUSTING MEANS BETWEEN PIVOTAL COOPERATING MEMBERS

William Duffy, Jamesburg, N.J., assignor to J. Wiss & Sons Co., Newark, N.J.

Continuation-in-part of Ser. No. 74,087, Sept. 21, 1970, Pat. No. 3,678,580. This application Jan. 17, 1972, Ser. No. 218,129
Int. Cl. B26b *13/28*
U.S. Cl. 30—267 11 Claims

A tool, for example, shears, having clearance adjusting means between pivotal cooperating members or blades. An adjustable ride in the means is provided to facilitate adjust-

ments of cutting blade clearance. The ride is concentrically circumposed around the pivot stud or bolt and interposed between the members or blades. Application is made to scroll



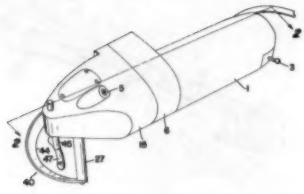
shears or snips with an offset cutting edge with relation to the flank of the shear, in order to obtain clearance to scroll slightly to the right, while retaining full maneuverability to the left.

3,740,847

POWER DRIVEN MEAT TRIMMING AND CUTTING KNIFE

Waldo H. Kliever, Gates Mills, and Clyde Mart, Beachwood, both of Ohio, assignors to said Mart, by said Kliever

Filed Feb. 4, 1971, Ser. No. 112,609
Int. Cl. B26b *7/00*
U.S. Cl. 30—272 A **6 Claims**



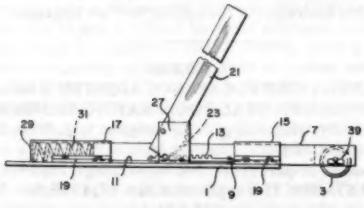
A power driven knife is provided for trimming and cutting meat, in which a knife blade is employed which oscillates through an arc as the blade is drawn through the meat. The blade is preferably in the form or shape of a section of a cone, the axis of which is the axis about which the blade oscillates.

3,740,848

ROTARY CUTTER ASSEMBLY

John M. Lindley, P.O. Box 1464, Oakland, Calif.

Filed Aug. 16, 1971, Ser. No. 172,069
Int. Cl. B26b *3/00*
U.S. Cl. 30—319 **6 Claims**



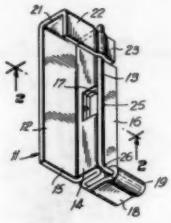
A cutter for sheet material such as sheet metal, linoleum, etc., wherein a rotary cutting blade is reciprocally actuated by means of a handle terminating in a gear sector or pinion which engages a slidably supported rack, which in turn controls the reciprocal movement of the rotary cutting blade.

3,740,849

ORTHODONTIC BRACKET

James M. Rubin, 141 W. 17th Street, New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 181,917
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 A **8 Claims**



An improved orthodontic bracket for mounting to a tooth band and for receiving an arch wire wherein the bracket is formed of sheet material and the arch wire may readily be clamped in and removed from the bracket.

3,740,850

TERTIARY AROMATIC AMINE ACCELERATORS IN DENTAL COMPOSITIONS

Rafael L. Bowen, Gaithersburg, and Harold Argentar, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Feb. 2, 1971, Ser. No. 112,077
Int. Cl. C08f *3/66*
U.S. Cl. 32—15 **12 Claims**

Direct dental filling materials and corresponding methods of treating human teeth utilizing known methacrylate dental polymer formers, peroxide catalysts, reinforcing fillers and unique tertiary aromatic amine accelerators with large substituents on the nitrogen atom and alkyl substituents on the aromatic ring at the 3 and 5 positions or the 4 position. Particularly preferred structures are N,N-disubstituted 3,5-xylidines, 4-methyl, and 4-tertiary butyl varieties.

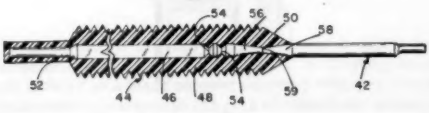
When used in direct dental fillings, the compounds are uniformly non-volatile, at least three members of the group are crystallizable, and at least one member of the group serves dually as an accelerator and monomer.

3,740,851

JACKETED DENTAL ANCHOR

Bernard Weissman, 340 Ashland Place, Brooklyn, N.Y.

Filed Jan. 13, 1971, Ser. No. 106,152
Int. Cl. A61k *5/02*
U.S. Cl. 32—15 **12 Claims**



A jacketed dental anchoring pin for insertion into a predrilled pin channel provided in the dentin of a tooth to partially project from the latter and anchor a superstructure to the tooth comprising an elastomeric or ceramic elongate hollow sleeve having opposite end portions and an intermediary threaded anchoring portion between the opposite end portions. An elongate metallic reinforcing core extends substantially throughout the entire hollow sleeve internally of the latter. One end portion of the sleeve carries a resilient element

for abutting against the endmost portion of the pre-drilled pin channel in the tooth. The reinforcing core is mounted internally of the hollow sleeve in a manner which prevents both axial and rotational displacement of the core relative to the sleeve.

3,740,852

HOLDER ASSEMBLY FOR DENTAL TOOLS

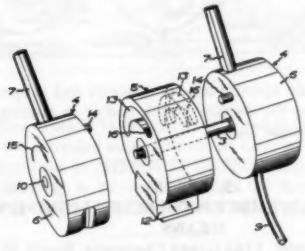
John Gustav Ulrik Holmqvist, Ystad, Sweden, assignor to Tomelilla Dental AB, Ystad, Sweden

Filed Sept. 8, 1970, Ser. No. 70,039

Claims priority, application Sweden, Sept. 9, 1969, 12397/69

Int. Cl. A61c *19/02*

U.S. Cl. 32—22 2 Claims



A holder assembly for a dental tool fed through an elongate flexible connection having a support member for the flexible connection rotatably mounted on a shaft, and biasing means connected to the support member through a lost motion coupling and counterbalancing the weight of the flexible connection and the support member in the working position of the tool.

3,740,853

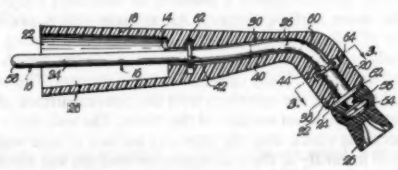
DENTAL PROPHY ANGLE

George R. Brahler, Lawrence, Kans., assignor to Exitec, Inc., Lawrence, Kans.

Continuation-in-part of Ser. No. 17,432, March 9, 1970, abandoned. This application June 3, 1971, Ser. No. 149,590

Int. Cl. A61c *3/00*

U.S. Cl. 32—59 1 Claim



A dental prophy angle adapted to be coupled with a conventional power source, the angle being used in dental prophylaxis and being of a disposable construction whereby there is no danger of a chain of sepsis from one patient's mouth to another. The dental prophy angle is fabricated from suitable plastic materials and includes a housing having a passageway formed therein and extending from one end of the housing to the other, a flexible, rotatable drive shaft extending the length of the housing within the passageway, the shaft having a base stretch, a reduced stretch, and a head stretch, there being at least a pair of outwardly extending, annular ribs on the shaft, which ribs are received by recesses in communication with the passageway, the base stretch of the shaft being coupled with the power source, the head stretch being angularly offset with respect to the base stretch and having means thereon for receiving a workpiece.

3,740,854

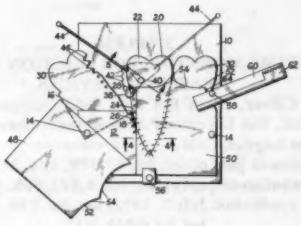
DEMONSTRATION DEVICE FOR ILLUSTRATING TOOTH STRUCTURE AND DENTAL CARE

La Donna Jeanne Black, P.O. Box 3375, Portland, Oreg.

Filed June 19, 1972, Ser. No. 264,075

Int. Cl. A61c *19/00*

U.S. Cl. 32—71 7 Claims



A demonstration device employing a backing sheet with a base member secured thereon representing a jawbone. The base member has a socket which receives the lower or root portion of a tooth representing member. Elastic tie members connect the root portion of the tooth representing member to the base to illustrate a periodontal fiber connection. A tab member is pivotally attached to the upper portion of the tooth representing member and is movable between an exposed position adjacent to an edge of the tooth representing member and a hidden position. A pull string is attached to the tab for operating the tab between its two positions, and such pull string in moving the tab to its hidden position demonstrates the removal of plaque from a tooth by the use of dental floss. Auxiliary tooth representing members are provided on each side of the first mentioned tooth representing member, one of such auxiliary tooth representing members being pivotal so as to be moved out of the way during a demonstration. A pair of transparent panels representing gum portions are pivotally connected to the base and have an upper edge which demonstrates a gum margin associated with the tooth representing member. An auxiliary panel is employed having a toothbrush representation thereon and is adapted to be positioned in the gum margin to illustrate how such margin area can be cleaned with a toothbrush.

3,740,855

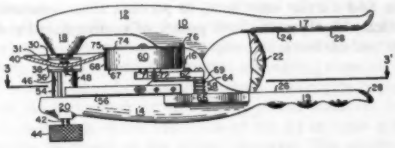
LENS CIRCUMFERENCE MEASURING INSTRUMENT

Frank J. Bean, 40 S. Franklin Street, and John F. Sheridan, 75 Poole Circle, both of Holbrook, Mass.

Filed Sept. 9, 1971, Ser. No. 178,937

Int. Cl. G01b *3/12*

U.S. Cl. 33—141 E 10 Claims



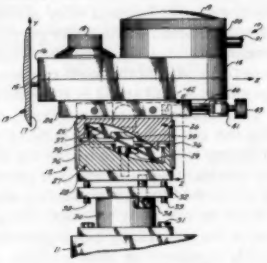
There is disclosed a hand-held, manually operated instrument for measurement of the circumferences of lenses or the like. The instrument comprises a pincer means the jaws of which are resiliently urged to the closed position. Included in the jaw assembly are opposed rotatable platforms adapted to grip a lens workpiece therebetween. At least one of the platforms is manually rotatable through a drive shaft associated therewith and further comprises an indexing arrangement adapted to accurately index and signal the start and finish of 360° of rotation of the platform. Against the circumference of

a lens workpiece held between the platforms there is resiliently biased a freely rotatable, laterally translatable measuring wheel. Upon rotation of the lens through 360° the measured circumference is read directly from a scale provided in association with the measuring wheel.

3,740,856
FLEXURE MOUNTING FOR FRICTION WHEEL MEASURING DEVICES

Irven H. Culver, Playa Del Rey, Calif., assignor to Primus Mfg., Inc., San Lorenzo, P.R. and Southwestern Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 67,379, Aug. 27, 1970, which is a continuation-in-part of Ser. No. 9,872, Feb. 8, 1970. This application July 2, 1971, Ser. No. 159,201
Int. Cl. G01b *3/12*
U.S. Cl. 33—141 R **10 Claims**



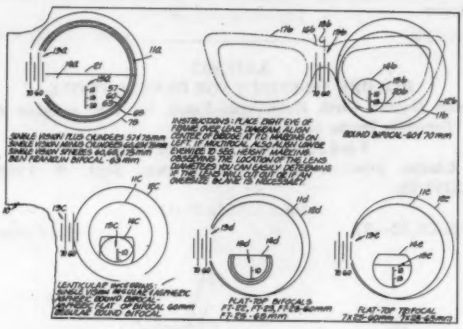
A mounting and biasing mechanism for maintaining an essentially constant tracking force between a frictionally driven wheel and a measurement surface, along which the wheel rolls, is described. The mechanism includes a base member and a carrier member having resilient means operatively coupled between them for biasing the carrier member relative to the base member along a predetermined path of movement defined for the carrier member. The predetermined path of movement of the carrier member is defined by flexure means connected between the base and carrier members. The flexure means is arranged to define three spaced laterally deflectable columns, aligned normal to the path of movement between the base and carrier members, to provide three essentially frictionless, highly compliant points of connection between the base and carrier members.

3,740,857
LENS BLANK AND FRAME COORDINATOR AND METHOD OF USING SAME

Frank O. Nerad, Burbank, Calif., assignor to Armorlite Lens Company, Inc., Burbank, Calif.

Filed Dec. 3, 1971, Ser. No. 204,474
Int. Cl. G01b *5/00*
U.S. Cl. 33—174 A **14 Claims**

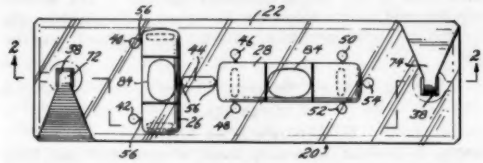
A method and device useful in determining if an ophthalmic lens blank is usable in preparing a lens for a particular spectacle frame selected by a patient. A plaque of planar material is imprinted with sets of graphical representations of various types of lens blank in full scale together with interpupillary and segment height scales for each. A selected frame is superimposed on the appropriate set of scales and properly adjusted to indicate the smallest blank usable in cutting out a lens for that particular frame.



3,740,858
SPIRIT VIAL ASSEMBLY WITH SELF-ALIGNING VIAL MEANS

Seymour A. Ostrager, 1188 Grand Concourse, Bronx, N.Y.

Filed Oct. 12, 1970, Ser. No. 79,937
Int. Cl. G01c *9/24*
U.S. Cl. 33—369 **6 Claims**



A spirit vial assembly which includes a frame comprising an elongated channel having parallel side walls and a connecting web extending transversely between the side walls. The side walls and the web form a recess. A transparent cover member is provided which includes a plurality of members projecting from the inner surface thereof. An arcuate vial is provided which is of substantially cylindrical cross-section having longitudinally convex and concave outer surfaces which are disposed on diametrically opposite sides of the vial. The vial is disposed between the members with the convex surface of the vial abutting the inner surface of the cover. The web has a pair of projections which abut the concave surface of said vial adjacent but inwardly of the end thereof so that the vial need not be further aligned with respect to the web to determine the horizontal orientation thereof.

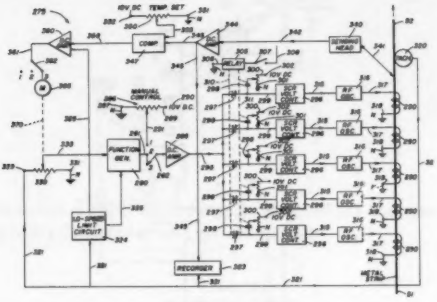
3,740,859
DRYING SYSTEM

Richard S. Patton, Flossmor; Naaman H. Keyser, Hinsdale; Vernon L. Langdon, Tinley Park; Victor D. Beaucaire, Homewood, and Louis A. Marlin, Crestwood, all of Ill., assignors to Interlake Steel Corporation, Chicago, Ill.

Division of Ser. No. 888,215, Dec. 29, 1969, Pat. No. 3,616,459. This application June 3, 1971, Ser. No. 149,627
Int. Cl. B01k *5/00*
U.S. Cl. 34—1 **5 Claims**

A system for continously applying paint to a continuously moving metal strap and thereafter continuously drying the paint on the metal strap. The system disclosed herein includes a drying station disposed above the paint pot includes a

number of induction coils through which the painted metal straps pass and have induced therein eddy currents which heat the metal strap to dry the paint thereon. Means are provided automatically to maintain the level of the paint and the concentration of solids in the paint contained in the paint pot, and means are provided automatically to vary the output from the induction coils in response to the speed and temperature of the metal strap to maintain constant the temperature of the metal strap exiting from the drying station.

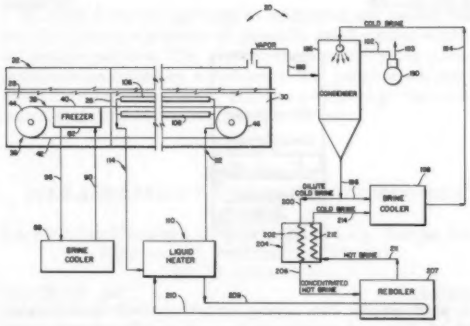


3,740,860

FREEZE DRYING METHOD AND APPARATUS

Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.

Filed July 31, 1972, Ser. No. 276,556
Int. Cl. F26b *5/06*
U.S. Cl. 34—5 **9 Claims**



Freeze drying methods and apparatus in which a product is frozen onto a conveyor in a vacuum vessel compartment in which the pressure is high enough to keep volatiles from evolving from the product. The product is then conveyed through a drying compartment maintained at a lower pressure where heat is applied to the product to evolve moisture from it. Thereafter, the dried product is removed from the conveyor and the vacuum vessel.

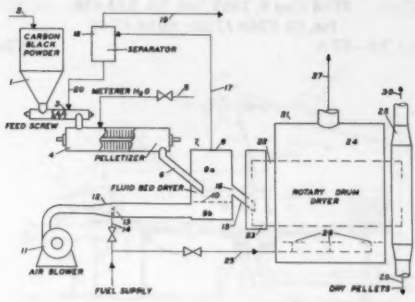
3,740,861

METHOD FOR DRYING CARBON BLACK PELLETS

Claude V. Myers, El Dorado, Ark., assignor to Cities Service Company, New York, N.Y.

Filed June 17, 1970, Ser. No. 47,085
Int. Cl. F26b *3/08*
U.S. Cl. 34—10 **12 Claims**

Wet pellets of carbon black are dried to produce dry pellets by means of a two-step process. In the first step a bed of wet pellets is fluidized by means of a heated gas and the pellets are thus partially dried. In the second step the partially dried pellets from the first step are subjected to additional drying while in a nonfluidized state, e.g. pellets from the fluidized bed are heated and subjected to a mild, mechanically produced tumbling action during the second step.

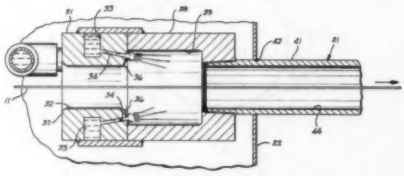


3,740,862

METHODS OF TREATING ELONGATED MATERIAL

Horst L. Woellner, Colden, N.Y., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,713
Int. Cl. F26b *7/00*
U.S. Cl. 34—20 **15 Claims**



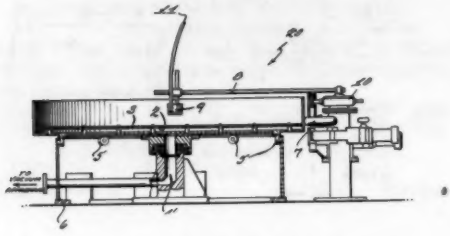
Successive sections of a strand material are advanced along a predetermined path into an entrance end of, through, and then out of a laterally closed chamber. The entrance end of the chamber is in communication with the air of the ambient atmosphere. High velocity jet streams of treating material are directed into the chamber toward oblique converging engagement with the successive sections of the strand material. Substantial components of the velocities of the jet streams are in the direction of travel of the strand material. The minimum cross-sectional area of the passages of the chamber through which the streams are directed and the strand material travels are substantially greater than that of the strand material. The velocity of the jet streams and the geometrical relationship of passages of the chamber through which the strand material and the jet streams pass and the pressure of the air are such as to create pressure differentials sufficient to cause air to be drawn into the entrance of the chamber at a volumetric flow which is substantially greater than that of the treating material. The air is mixed with the treating material to produce a vapor mixture which moves through the chamber along the path of the strand material to treat the strand material.

3,740,863

APPARATUS FOR OBTAINING WATER-FREE URANIUM COMPOUNDS

Hans Pirk, 7 Morickestrasse, Dornigheim; Fritz Ploger, 1 Konigsbergerstrasse, Kleinostheim, and Horst Vietzke, 1 Grunaustrasse, Grosseauheim, all of Germany

Filed May 9, 1969, Ser. No. 823,418
Int. Cl. F26b *17/00*; B01d *37/00*
U.S. Cl. 34—57 A **8 Claims**



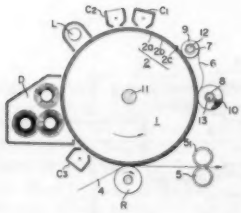
There is provided an apparatus for the recovery of powdered water-free uranium compounds from suspensions. The apparatus includes a filter, preferably a rotating horizontal suction filter connected to a fluidized bed.

3,740,864

CLEANING DEVICE IN AN ELECTROPHOTOGRAPHIC COPYING APPARATUS

Yoshio Ito, Tokyo, and Hajime Katayama, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1970, Ser. No. 66,818
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **10 Claims**



An improved cleaning device for use with an electrophotographic copying apparatus especially of the image transfer type. The cleaning device provides a cleaning web turned into S-shaped rolls and movable into contact with and away from a photosensitive medium, whereby any residual toner present on the surface of the photosensitive member can be readily removed by both sides of the cleaning web to completely prevent the formation of ghost images during the repeated use of the photosensitive medium for the image reproduction. The cleaning web can be moved from one of the rolls to the other to remove used portions of the web from the cleaning position and supply fresh portions of the web in place thereof.

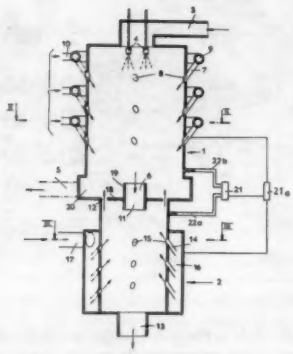
3,740,865

DRYING INSTALLATION

Pierre Robert Laguilharre, 6 rue Robin, Enghien-Les-Bains, France

Filed Feb. 1, 1971, Ser. No. 111,298
Claims priority, application France, Feb. 20, 1970, 7006095
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 E **22 Claims**

An installation for the drying by atomization of products dissolved or suspended in a liquid, comprising a drying chamber provided at one end with supply means for supplying drying air into the interior of the drying chamber, atomizing the liquid to be dried and directing the aforesaid liquid into the flow of drying air. The drying chamber is provided at the other end with discharge means for the discharge of the powder produced which deposits in the chamber, and at least one discharge aperture for the discharge of the drying air and of the portion of the powder entrained by the latter. The discharge aperture communicates with an air powder separator.

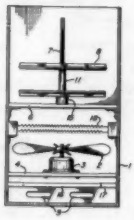


3,740,866

FILM DRYER

Harold R. Williams, 6730 E. Lafayette Street, Scottsdale, Ariz.

Filed May 14, 1971, Ser. No. 143,505
Int. Cl. F26b *17/24*
U.S. Cl. 34—58 **5 Claims**



A photographic film drying apparatus which incorporates both air flow and centrifugal force to rapidly remove water from processed film. The film is placed in a rotatably mounted holder and subjected to circular air flow. The circular air flow evaporates the water and rotates the holder. Thereby, a centrifugal force is provided to aid in the water removal process. Filtered air may be used to minimize the deposition of foreign particles on the film, and the air may be heated to further increase the water evaporation rate.

3,740,867

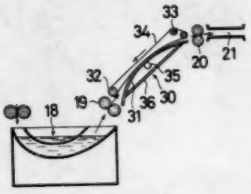
DRIER IN COPIER

Hiroshi Hamaguchi, Tokyo, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 3, 1971, Ser. No. 139,495
Int. Cl. G03g *5/00*
U.S. Cl. 34—95 **3 Claims**

A drier comprises a heater disposed behind a guide plate for drying, a heat reflecting plate for reflecting the heat from the heater toward the guide plate and means for transporting sensitive paper in sliding contact with the guide plate after the

paper has been passed through the developing station. The transport means serves to absorb moisture evaporating from

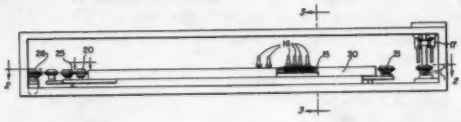


the sensitive paper while the paper is moved at a high speed so as to dry the paper rapidly and thoroughly.

3,740,868
PARISON OVEN

Lawrence A. Moore, King of Prussia, and Leroy Mauger, Douglassville, both of Pa., assignors to Beloit Corporation, Beloit, Wis.

Filed July 22, 1971, Ser. No. 165,136
Int. Cl. F27b *9/24*
U.S. Cl. 34—105 **11 Claims**

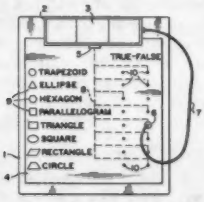


An oven in which parisons to be heated are carried back and forth along a plurality of generally parallel paths while in an upright position. The endless chain carrying the parison holders is protected by a dustcover. The parisons are turned about their axes periodically as they travel through the oven to assure that the parisons are heated uniformly.

3,740,869
SELF-ANSWERING PROGRAMMED INSTRUCTION DEVICE

Donald Adair Pleasants, 711 Marine Bank Bldg., Tampa, Fla.

Filed Nov. 23, 1971, Ser. No. 201,063
Int. Cl. G09b *7/02*
U.S. Cl. 35—9 C **10 Claims**

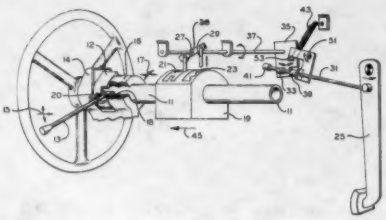


The present invention relates to a device for programmed instruction which permits a student to determine the correct answers to successive questions and answers by placing a stylus in contact with an electrical lead printed on the page of the text which activates an electrical circuit by which a visable or audible signal is transmitted to the student.

3,740,870
GEAR SHIFT MECHANISM

Noel T. Acker, and John G. Radice, both of Binghamton, N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Oct. 6, 1971, Ser. No. 186,945
Int. Cl. G09b *9/04*
U.S. Cl. 35—11 **6 Claims**



Gear shift and clutch simulation apparatus for use in a driver trainer in which manual and automatic shift patterns are contained in a block on the gear shift column and into one of which a pin is selectively inserted in accordance with clutch position, the clutch being in a down position for manual or an up position for automatic, by a linkage connected to the clutch pedal arm is shown. A further linkage causes the manual pin to be lifted a small amount from the block, which has deeper indentations at each shift position, in response to clutch operation to provide a realistic simulation.

3,740,871
CRASH DUMMY VISCOUS NECK

Roger J. Berton; Roger P. Daniel, both of Dearborn, and Conrad N. Reuter, St. Clair Shores, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 2, 1972, Ser. No. 259,093
Int. Cl. A63h *9/00*
U.S. Cl. 35—17 **16 Claims**

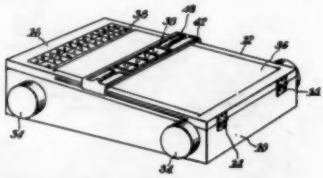
A simulated neck construction and arrangement is provided for coupling the head structure to the torso structure of an anthropomorphic dummy of the type used in vehicular crash testing. The simulated neck comprises a hydraulic mechanism or control utilizing a hydraulic housing attached to one of the structures and a plate means attached to the other of the structures. A pivot means between the housing means and plate means couples the two for relative tilting movements. A dampening means carried by the housing means and engaged with the plate means controls the tilt or wobble movement of the housing means relative to the plate means and thereby of the head structure relative to the torso structure.

3,740,872

APPARATUS FOR TEACHING WRITING

Victor S. Mayo, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,884
Int. Cl. G09b 11/04
U.S. Cl. 35—37 2 Claims



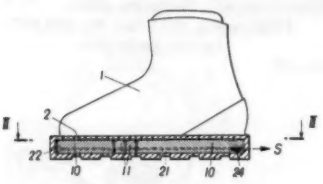
A hollow container has a flat top surface and supports removably individual blocks, each carrying an opening shaped into a different letter of the alphabet. A plurality of blocks can be inserted above the surface. When paper is disposed between surface and blocks, user can move a pencil point through the block openings to write the corresponding letters on the paper.

3,740,873

SKI BOOT WITH A SOLE WHICH RESISTS BENDING

Herbert Sturany, Vienna, Austria, assignor to Weiner Metallwaren-fabrik Smolka & Co., Vienna-Mauer, Austria

Filed June 9, 1972, Ser. No. 261,488
Claims priority, application Austria, June 18, 1971, A5311/71
Int. Cl. A43b 00/00
U.S. Cl. 36—2.5 AL 6 Claims



Ski boot with a rigid or flexible sole. In a ski boot provided normally with a relatively flexible sole, there is provided a stiff insert which is interrupted in the zone of the ball of the foot and is there provided with one or more cross members. Said cross members are contoured to having easy rolling movement with respect to each other or with respect to the adjacent surfaces of the insert. Tension wires are arranged in the sole in the tension zone thereof which wires are anchored at the forward end of the boot and attached to suitable tensioning means at the heel end. These tensioning means may be manually operated or may be operated automatically by the heel binding of the ski, whereby same when actuated will hold the boot sole rigid in condition for effective skiing but when released will permit the boot its normal flexibility.

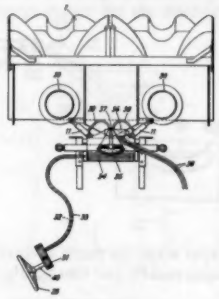
3,740,874

SNOW CLEARERS

Marcel Boschung, Schmitten, Switzerland, assignor to Firma Marcel Boschung, Ried, Schmitten (Canton of Fribourg), Switzerland

Filed Dec. 6, 1971, Ser. No. 204,886
Claims priority, application Switzerland, Dec. 17, 1970, 18754/70
Int. Cl. E01h 5/00; F16k 31/44
U.S. Cl. 37—43 7 Claims

This invention concerns a snow clearer comprising an automotive vehicle; a snow clearing device, the snow clearing device being mounted anteriorly of the automotive vehicle, a snow cutter means being mounted on the snow clearing device; swivel means linking the automotive vehicle and the snow clearing device and permitting the snow clearing device to be swivelled about a vertical axis; and remote control urging means for causing the snow clearing device to swivel about said vertical axis.

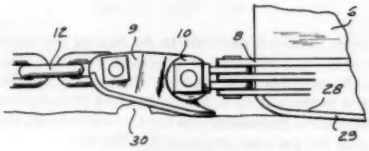


3,740,875

DRAGLINE BUCKET WITH SKID LINK

Terence Edward Voyce, Billericay, England, assignor to Bofors (Great Britain) Company Limited, Billericay, Essex, England

Filed May 10, 1971, Ser. No. 141,739
Claims priority, application Sweden, May 15, 1970, 23798/70
Int. Cl. E02f 3/46
U.S. Cl. 37—115 4 Claims



There is disclosed a dragline bucket for collecting and emptying various materials such as earth, gravel, etc., the bottom of which is provided at its mouth end with excavator teeth and which further has at its mouth end adjacent to each side walls a coupling member. Each of the coupling members is movable at substantially right angles to and substantially longitudinally of the bottom of the bucket. Moreover, each of the coupling members is connected at one end to a cable or chain for dragging the bucket along the ground. Each of the coupling members has at one end detachably coupled thereto a second coupling member, the other end of each of the second pair of coupling members being detachably connectible to a side wall of the bucket. The second coupling members are movable in a plane transverse to the mouth end of the bucket. Each coupling member of the first-mentioned pair of such members mounts at its bottom a skid or runner extending in the longitudinal direction of this coupling member.

3,740,876

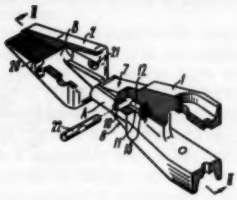
TOOTH FOR THE BUCKET OF A DIGGING MACHINE

Boris Ivanovich Solokhin, prospekt Lenina 21, Kv. 40, and Galina Markovna Rubinchik, prospekt Lenina 21, Kv. 41, both of Kolpino Leningradskol Oblasti, U.S.S.R.

Filed Jan. 6, 1971, Ser. No. 104,304
Int. Cl. E02f 9/28
U.S. Cl. 37—142 A 1 Claim

A tooth of the bucket of a digging machine characterized in that the support side edges of the lug of the tooth base have

one and the same thickness along their whole length which is such that in the course of operation the end face of the lug



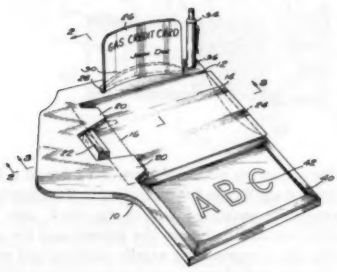
thrusts against the bottom of the mortise of the changeable cap to resist the action of the force of cutting.

3,740,877

HOLDER FOR CREDIT CARD PURCHASE FORM

Vernon J. Hunt, Glendale, Wis., assignor to Display Corporation International, Milwaukee, Wis.

Filed July 23, 1971, Ser. No. 165,500
Int. Cl. G09f 3/16
U.S. Cl. 40—13 **7 Claims**



The holder has a generally planar base with a rectangular, flat-surfaced portion on which a credit card purchase form is held for signature by the customer. The form is held in place by the clamping action between a pair of fingers, spaced above the flat-surfaced portion to accommodate one end of the form, and a depressible tab positioned between the fingers and normally biased towards the fingers. The fingers and tab are formed as an integral part of the base. The customer's credit card is prominently held in the vertical position in an arcuate slot in the base for its return to him. The base also includes an integral, lateral extension on which point-of-purchase advertising or similar indicia, which is readily observable by the customer when signing the form, can be mounted.

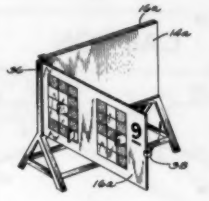
3,740,878

DEVICE FOR DISPLAYING PRICE INFORMATION

Daniel J. Oelschlaeger, Oak Creek, Wis., assignor to Display Corporation International, Milwaukee, Wis.

Filed Aug. 13, 1971, Ser. No. 171,584
Int. Cl. G09f 11/00
U.S. Cl. 40—28 C **9 Claims**

The device for displaying price information includes a fixture holding at least one numeral indicating section. Each numeral indicating section includes a plurality of segments which are arranged in a plurality of lateral and longitudinal rows and rotatably mounted to the holding fixture so that each can be selectively rotated from one side to another. One surface of each segment is of one color and another surface is of a contrasting color. By selective rotation of the segments, the outer exposed surfaces of some provide a background of one color and the outer exposed surfaces of the remaining form an appropriate numeral of a contrasting color which indicates the price. A backing member juxtaposed the backside of the holding fixture prevents the segments from rotating when the holding fixture is in the display position. Numeral changes corresponding to the unit price of the merchandise advertised can be made by simply moving the holding fixture away from the backing member so the segments are free to rotate, selectively rotating the segments to form the appropriate numeral and returning the holding fixture to the display position.

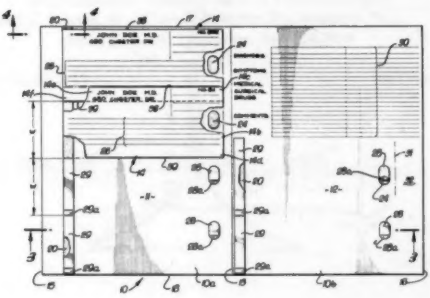


3,740,879

RECORDATION OF PATIENT MEDICAL DATA

Richard J. Patterson, 2170 Century Park East, No. 1210, Los Angeles, Calif.

Filed Nov. 1, 1971, Ser. No. 194,755
Int. Cl. G09f 7/12
U.S. Cl. 40—102 **1 Claim**



For use in recording patient medical data including mounting of rectangular prescription forms, the combination comprising

a. a relatively stiff, generally rectangular sheet sized to receive sequential application of the forms,

b. adhesive sections on the sheet located to adhere to edge portions of the forms, and

c. removable protective stripping protectively overlying the adhesive sections to be selectively removed for enabling application and adherence of the forms to the adhesive sections.

3,740,880

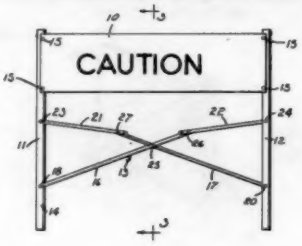
FOLDABLE BARRICADE AND SIGN

Bill M. Sweet; Gary T. Hundery, both of Spokane, Wash., and Charles R. Baldwin, deceased, late of Spokane, Wash. (Beatrice Baldwin, executrix), assignors to Minnesota Mining & Manufacturing Corporation, St. Paul, Minn.

Filed Nov. 12, 1970, Ser. No. 88,719
Int. Cl. G09f 1/00
U.S. Cl. 40—125 **10 Claims**

A barricade is formed by a pair of oppositely disposed rigid legs joined by a pivoted brace assembly that maintains the legs parallel to one another to form a foldable frame for support of

a flexible sign display. The frame is supported by similar spaced legs either pivotally connected thereto or joined by similar brace assemblies. Each leg is angle-bar shaped with the



free edges facing the opposite legs. The brace assembly lies between the parallel legs so that when the legs are brought together the braces are enclosed between the flanges of the angle-bars.

3,740,881

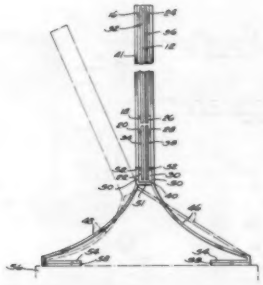
PLACARD HOLDING DISPLAY ASSEMBLY

Otto R. Finger, Mequon, Wis., assignor to Display Corporation International, Milwaukee, Wis.

Filed June 16, 1971, Ser. No. 153,641

Int. Cl. G09f *07/00, 07/22*

U.S. Cl. 40—125 H **12 Claims**



A display assembly includes a vertical panel having horizontal guides between which removable display placards are held and a base which holds the panel in an upright position during normal wind conditions. The base has side walls constructed from a resilient material, such as a thermoplastic material. When the panel is subjected to abnormal winds, the base side walls are distorted from their normal shape and the panel is allowed to tip over in the direction of the prevailing winds. This tipping of the panel reduces the assembly's resistance to wind, and hence, its vulnerability to wind damage. When the wind decreases to a normal level, the side walls spring back to their normal shape and the panel is returned to the upright position.

3,740,882

COMBINATION SIGN BOARD AND TRUCK REMOVABLE WALL

Ralph C. Lanphere, and Robert L. Elton, Racine, both of Wis., assignors to J. I. Case Company, Racine, Wis.

Filed May 10, 1971, Ser. No. 141,786

Int. Cl. G09f *7/00*

U.S. Cl. 40—129 C **3 Claims**

A combination sign board and truck removable wall for use on a truck bed where the walls have stakes and are insertable into holes around the periphery of the bed. The sign board is mounted on the truck removable wall and has a frame extending around the board for protecting the board from damage due to the throwing of the combinad board and wall off the truck and onto the ground. Also, the assembly has the truck bed insertable stakes affixed to the combined board and wall

so that the entire assembly can be handled as a unit, but the sign itself is affixed in a removable manner so that it can be changed. The entire assembly provides for a protected sign and it also provides for a structurally reenforced type of removable wall.

3,740,883

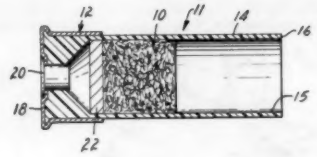
BARREL CLEANING DEVICE

Robert C. Kyle, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 12, 1971, Ser. No. 115,007

Int. Cl. F41c *31/00*; **F42b** *5/24, 9/22*

U.S. Cl. 42—1 R **10 Claims**



A device for removing material from the bore of a firearm including a primed shell case for mounting in the chamber of a firearm, a projectile mounted within the shell, and a wad mounted within the case between the primer and the projectile. The projectile comprises an axially compressed cylindrical portion of open, low density randomly woven resilient organic material capable of intimate contact with the bore of a firearm to remove foreign material, moisture, and powder residue upon propulsion through the bore by detonation of the primer.

3,740,884

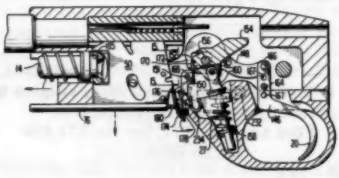
FIREARM

Gary Wilhelm, 55 Kelly Road, Hamden, Conn.

Filed Mar. 23, 1971, Ser. No. 127,324

Int. Cl. F41c *13/00*

U.S. Cl. 42—17 **6 Claims**



A rifle has a cartridge-elevating mechanism located within a housing which is detachable from the rifle. The cartridge elevating mechanism may be a lifter mechanism for receiving cartridges from a tubular magazine and elevating them into the path of a sliding bolt for eventual movement into the firing chamber. Such a lifter mechanism and its housing may be in-

terchangeable with a box magazine type of cartridge elevating mechanism. The housing of either type of cartridge elevating mechanism is biased rearwardly into firm engagement with a stationary abutment surface so as to position the cartridge elevating mechanism.

Flat action bars are connected to the bolt and have their forward ends pivotally connected to an axially slidable member. The lower edges of the action bars are provided with downwardly open cutaway portions which provide cam surfaces for operating the lifter mechanism. On the upper edge of the action bars, there is a forwardly facing inclined abutment surface which is engagable with a latch means having a corresponding rearwardly-facing surface to hold the action bars and the bolt in a rearward breech-open position.

3,740,885

TOY PISTOLS

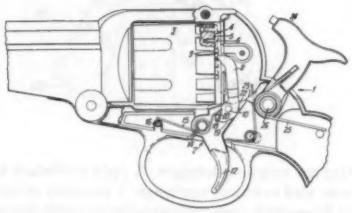
Graham Leaman, Crosskeys, England, assignor to The Crescent Toy Company Limited, Cwmcarn, Monmouthshire, England

Filed Nov. 17, 1971, Ser. No. 199,443

Claims priority, application Great Britain, Dec. 15, 1970, 59,549/70

Int. Cl. F41c *3/06, 19/00*

U.S. Cl. 42—58 **1 Claim**



A toy pistol has a hammer mechanism which includes a hammer lever controlled by a cam surface which cooperates with a nose portion on the trigger lever. The cam surface is formed on a separate member turning about the same fixed pivot as the hammer lever and is spring loaded by means of a light spring so that it normally rests against the front surface of the hammer lever adjacent the pivot, but is able to pivot freely away from the hammer lever against the effect of its spring, to permit the return movement of the trigger lever.

3,740,886

MEANS FOR SUPPORTING AND AIMING A HAND-HELD FIREARM

Jack Y. Canon, 2194 Delmas, Opelousas, La.

Continuation-in-part of Ser. No. 746,895, July 23, 1968, Pat. No. 3,553,878. This application Jan. 7, 1971, Ser. No. 104,600

Int. Cl. F41c *29/00, 23/00*

U.S. Cl. 42—94 **14 Claims**

Device for supporting and aiming a hand-held device such as a gun in firmly fixed position with means for securing and bracing it about the wrist while aiming and firing, and a cheekpiece for adjusting or fixing the desired distance of the head of the aimer with respect to the extended arm bent into aiming position of the hand-held device.

3,740,887

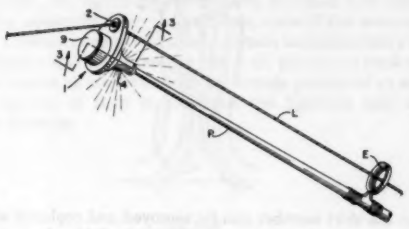
NIBBLE DETECTING LIGHT FOR FISHING POLES

Marion Van Leeuwen, 531 High St. Apt. 5, New London, Wis.

Filed Nov. 29, 1971, Ser. No. 202,794

Int. Cl. A01k *97/12*; **F21v** *33/00*

U.S. Cl. 43—17.5 **16 Claims**



An economical, lightweight self-contained lighting unit attachable to the tip of a fishing pole to indicate a position or movement of the fishing pole under conditions of low visibility so that a person using the fishing pole is enabled to readily observe a nibble or strike by a fish or any other pull on the fishing line which affects the tip of the pole.

3,740,888

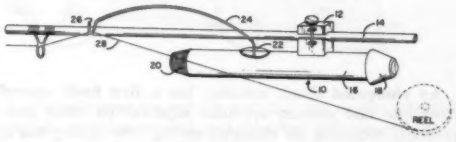
SIGNALLING MEANS FOR A FISHING ROD

Russell L. Young, Jr., 424 Washington St., Boonton, N.J.

Filed Jan. 24, 1972, Ser. No. 220,004

Int. Cl. A01k *97/12*

U.S. Cl. 43—17 **10 Claims**



A signalling means comprising a cylindrical carrier clamped to a fishing rod with spring-responsive elements which illuminate a lamp when an extending limb, which engages a fishing line, is strained by the line. The responsiveness of the signalling means is selectively and infinitely adjustable, and all the cooperative components are wholly enclosed within the carrier, except for the adjustment knob, the line-engaging limb and the lamp.

3,740,889

FISHING LURE

Blayney J. Scott, 306 Dallas Road, Victoria, British Columbia, Canada

Filed Apr. 2, 1971, Ser. No. 130,576

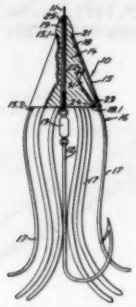
Claims priority, application Canada, June 4, 1970, 084627

Int. Cl. A01k *85/00*

U.S. Cl. 43—42.09 **3 Claims**

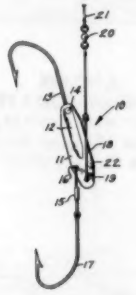
A fishing lure having a substantially frustoconical body member tapering to a bulbous head portion connectable to a fishing line and a resilient sleeve having a snap fit over the bul-

bous head portion and a snug fit on the body member for releasably clamping a skirt member to the body member so



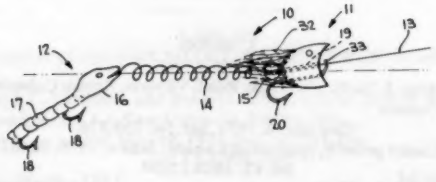
that the skirt member can be removed and replaced without disconnecting the body member from the fishing line.

3,740,890
FISH HOOK
Francis J. Aron, 186 Orchid Drive, Mastic Beach, N.Y.
Filed May 6, 1971, Ser. No. 140,800
Int. Cl. A01k *83/00*
U.S. Cl. 43—37 **1 Claim**



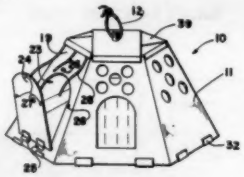
An elongated shank member has a first hook extending from one end and an aperture adjacent its other end for pivotally receiving an elonated spring. The spring has arms which embrace side portions of the shank and the arms are releasably held in this position by projections on the shank. A second hook is pivotally connected to the shank for swinging the shank and first hook about the spring pivot when the same is tensioned by fish.

3,740,891
COMBINED FISHING LURE
Morris B. Rubenstein, 349 Gunston Hall Court Hampton, Va.
Filed May 3, 1972, Ser. No. 250,011
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.02 **10 Claims**



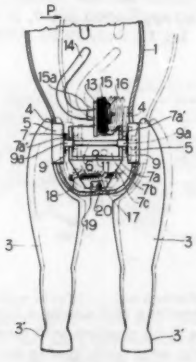
A fishing lure utilizing the natural instinct of fish to strike a predator which is itself stalking prey including a leader lure, a follower lure, a bead device positioning the leader lure, and a spring-like coil of plastic monofilament line connecting said leader and follower lures to give the combined lure "life-like" action. The leader lure has a lengthwise passage through which the line passes and the hook is slidably attached to said monofilament line; the lure and hook being supported in place by said bead device. The monofilament line is wrapped around and through the bead device to support the leader lure in position and to provide "catch up" action by controlled slipping. The bead device is pulled back and forth over the monofilament line to form the connecting coil. The follower lure may be a spinning rod type bait having a floatable head and a flexible body giving the appearance of the predator and allowing casting the lure using a spinning/spin-cast type rod.

3,740,892
LOBSTER TRAP
Norman D. Cox, Zionsville, and Alexander G. P. McInnes, Indianapolis, both of Ind., assignors to International Research and Development Corporation, Indianapolis, Ind.
Filed Feb. 16, 1972, Ser. No. 226,773
Int. Cl. A01k *69/00*
U.S. Cl. 43—100 **8 Claims**



A trap for catching lobsters. A rigid enclosure has a plurality of side wall entrance openings. A plurality of inclined ramps extend from each side wall opening towards the center of the enclosure. The inner ends of each ramp are spaced apart forming a lobster fall through hole which is covered by a collapsible floor. The collapsible floor includes a plurality of spring elements arranged in a sheet configuration and mounted in cantilevered fashion. A lobster entering the enclosure via a ramp will fall through the collapsible floor and become trapped. A door is hingedly mounted to one of the side walls to facilitate removal of the trapped lobster.

3,740,893
PNEUMATICALLY OPERATED WALKING DOLL
Yoshie Shinoda, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Katsushika-ku, Tokyo, Japan
Filed Mar. 29, 1971, Ser. No. 128,676
Int. Cl. A63h *29/16*
U.S. Cl. 46—44 **3 Claims**



A walking doll of the type in which its legs are operatively connected with its torso and are arranged to step forward al-

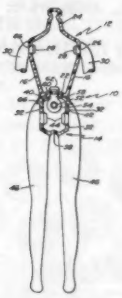
ternately as the weight is shifted from one leg to the other by swinging its torso right and left, including a pneumatic system operative for imparting the swinging motion to the torso. The pneumatic system comprises a hollow inflatable body disposed within the torso and a pneumatic remote-control device for supplying and removing air from the inflatable body. Pneumatic accessories such as a ballon, a sounder, or a toy dog may be attached to the doll. The body may be moved and caused to "bark" by pneumatic means.

3,740,894

DOLL CONSTRUCTION

Richard E. Howland, Bellingham, Mass., and Carl E. Cederholm, Providence, R.I., assignors to Hasbro Industries, Inc., Pawtucket, R.I.

Filed May 28, 1971, Ser. No. 147,804
Int. Cl. A63h *3/20*
U.S. Cl. 46—161 **5 Claims**



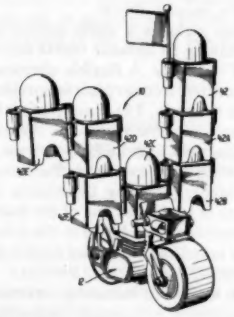
A doll construction comprising hollow torso and trunk members and means releasably connecting said members, said connecting means being so constructed as to permit relative rotation of said members about an upright axis while at the same time permitting lateral tilting of said torso with respect to said trunk.

3,740,895

AMUSEMENT DEVICE

Yoshizo Nagasaka, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Katsushika-ku, Tokyo, Japan

Filed July 20, 1972, Ser. No. 273,672
Int. Cl. A63h *11/10*
U.S. Cl. 46—202 **10 Claims**



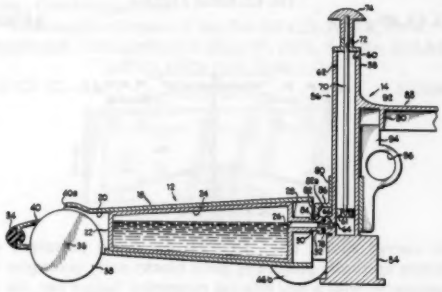
An amusement device featuring a moving vehicle provided with projections to which figurines may be attached in varying formations to amuse the child, each of the figurines including sidewalls spaced apart defining a cavity, the sidewalls terminating downwardly in an opening and upwardly in a top member, the top member of each figurine and each of the vehicle projections being complementary in configuration with respect to the opening of each figurine permitting each of the projections to be inserted within each of the openings at the bottom of the figurines and the top portions of each of the figurines to be inserted within the openings within the bottoms of each of the figurines so as to extend within the cavities of the figurines, the figurines further being provided with arms extending outwardly from the sidewalls, each of the arms including a female portion and a male portion complementary in configuration thereto permitting the male portion of each of the figurines to be inserted within the female portion of an adjacent figurine in such manner that the figurines may be stacked sideways.

3,740,896

JET POWERED VEHICLE

Marvin I. Glass, Chicago; Leonid M. Kripak, Villa Park, and Burton C. Meyer, Downers Grove, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 13, 1971, Ser. No. 207,130
Int. Cl. A63h *17/00*
U.S. Cl. 46—206 **3 Claims**



A combination jet toy vehicle and charging device wherein the vehicle includes an enclosed chamber with a rear outlet, through which a first medium, such as a liquid, may be introduced in to the chamber and the chamber charging device includes an air pump with a one-way valve for sealing engagement with the chamber outlet, and further includes a clamp means for pulling the vehicle in sealing engagement with the charging device, and trigger means for releasing the clamping device following the charging of the chamber to permit the vehicle to be propelled by means of reaction of the jet drive.

3,740,897

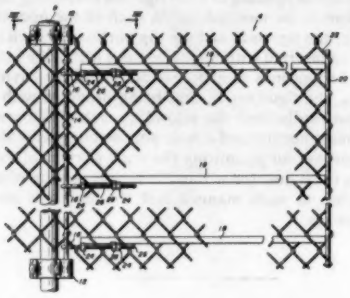
GATE FOR CHAIN-LINK FENCE

William H. Johns, Hudson, Ohio, assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 2, 1972, Ser. No. 231,279
Int. Cl. E06b *11/00*
U.S. Cl. 49—381 **3 Claims**

Gate utilizes a continuation portion of the chain-link fabric of the fence for a gate by disposing a pivot shaft vertically interwoven through the interlocking pickets of the fence fabric adjacent one edge of the gateway and attaching the pivot shaft to the terminal post adjacent the gateway. The continuation portion of the fabric which is the gate extends beyond the pivot shaft and spans the gateway. Thus, the gateway may be

opened or closed by bending action of the continuation portion of the chain-link fabric of the fence about the pivot shaft.



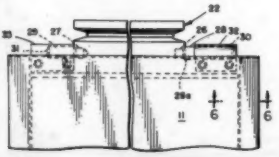
Adjustable means are provided for tensioning the continuation portion of the chain-link fabric.

3,740,898

CURVED SLIDING DOOR ASSEMBLY

Robert K. McKenzie, Lake Forest, Ill., assignor to Morton Manufacturing Company, Libertyville, Ill.

Filed June 30, 1972, Ser. No. 267,962
Int. Cl. E05d *13/02*
U.S. Cl. 49—409 **4 Claims**



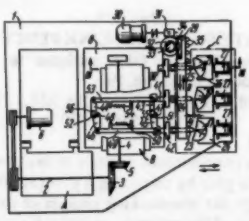
A curved sliding door assembly for a rail passenger car wherein upwardly projecting pivot blocks carry pivot pins for engagement with a ball bearing supported hanger bar, the assembly permitting free pivotal movement about a horizontal axis of the curved door so as to prevent binding during horizontal sliding movement.

3,740,899

MACHINE FOR LAPPING SPIRAL BEVEL AND HYPOID GEARS

Vladislav Kazimirovich Sorokovsky, ulitsa Ogorodnaya 170/2 kv. 11; Anatoly Vasilievich Bogachev, ulitsa Ogorodnaya 170/2 kv. 2, and German Ivanovich Kuznetsov, Saratov Ilinsky proezd 11 kv. 25, all of Saratov, U.S.S.R.

Filed Dec. 16, 1971, Ser. No. 208,594
Int. Cl. B24b *37/00*
U.S. Cl. 51—26 **4 Claims**



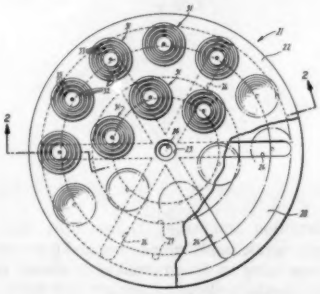
A machine for lapping spiral bevel and hypoid gears, wherein the device to impart to one of the spindles thereof oscillating motion in three mutually perpendicular directions comprises three cam followers arranged on the slide block in parallel to one another, and three pairs of cams, of which each is mounted with the possibility of being imparted an independent setting motion lengthwise the geometrical axis of the cam follower interacting therewith. Each of the cam followers, while reciprocating in a direction crosswise to the geometrical axis of its own, by one of its ends alternatively interacts with the cams of its respective pair, whereas the other end thereof is kinematically associated with said spindle. As a result of the resultant motion of all the cam followers said spindle performs oscillating motion in three mutually perpendicular directions with an initial point specific to each of the face surfaces of the tooth being lapped.

3,740,900

VACUUM CHUCK ASSEMBLY FOR SEMICONDUCTOR MANUFACTURE

Albert P. Youmans, Cupertino, and Lionel A. Kirton Saratoga, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed July 1, 1970, Ser. No. 51,610
Int. Cl. B24b *41/00*
U.S. Cl. 51—235 **5 Claims**



Apparatus for fabricating a dielectrically isolated semiconductor structure which includes a vacuum chuck assembly for use with a grinding machine with means for supplying a vacuum to the vacuum chuck. The vacuum chuck assembly consists of a body with a bore provided in the body and adapted to be connected to the source of vacuum. The body has a surface with a plurality of vacuum chucks carried thereby. The body and the vacuum chucks are formed with holes and passages which establish communication with the bore in the body so that a vacuum is supplied to the inserts whereby wafers from which the dielectrically isolated semiconductor structures are to be formed can be supported by and retained by the vacuum chucks.

The apparatus also includes a wafer mounting jig which consists of a body having an annular recess therein opening through one side of the body. A flexible diaphragm extends over the annular recess and a cover plate is provided for securing the diaphragm to the body. The cover plate is formed with a plurality of holes overlying the recess and the diaphragm. A relatively non-compressible liquid fills the recess. A plurality of wafer mounting blocks are inserted in the recesses. Means is provided for yieldably retaining the blocks in the body whereby when a force is applied to one of the bodies, equalizing forces will be supplied by the liquid to the other mounting blocks so that all the mounting blocks are forced outwardly by the liquid by substantially equal forces.

The apparatus also includes a mounting press which consists of a plate which is provided with means for cooling and heating the plate. A wafer guide member is provided which has a plurality of holes therein. Means is provided for mounting the guide member on the plate to permit vertical movement of the guide member relative to the plate. A plurality of mounting blocks are mounted in the holes. Each of the mounting blocks

is adapted to receive a wafer. A bonding material such as wax is provided on the mounting blocks and pressure plate means is provided for applying pressure to the wafers so that the bonding agent will be uniformly and thinly distributed between each wafer and the associated mounting block.

The method for fabricating a dielectrically isolated semiconductor structure consists of providing a semiconductor body with a first polished planar surface and then covering this polished surface with a protective material which has a substantially uniform thickness over the polished surface. The semiconductor body with the protected polished surface is then mounted on the vacuum chuck assembly with the polished surface facing the vacuum chuck assembly. The vacuum chuck assembly is then placed in a grinding machine and a second planar surface is provided which is parallel to the first polished surface to provide a semiconductor body of the desired thickness. Conventional steps are thereafter utilized to provide the dielectrically isolated semiconductor structure.

3,740,901
APPARATUS WITH SELECTIVELY RIGID AND FLEXIBLE SUPPORT CABLE

Loring Coes, Jr., Princeton, Mass., assignor to Norton Company, Worcester, Mass.

Division of Ser. No. 30,004, April 20, 1970, Pat. No. 3,629,978. This application June 17, 1971, Ser. No. 154,192
Int. Cl. B24b *41/00*
U.S. Cl. 51—166 TS **3 Claims**

An easily manually operated, positioned, and controlled apparatus having a fluid pressure system to drive and/or feed a tool into a workpiece. A tool head is pivotally supported, for movement in various directions, at an end of an unsupported portion of a normally rigid movable composite cable extending longitudinally above a floor from between guide rollers mounted on a support. The composite cable is rigidified by a radially compressed bundle of flexible strands of wires held in frictional engagement by the contracting force of a resilient flexible tube expanded thereover. Hence, the composite cable acts like a solid shaft providing greater resistance to bending by the fluid pressure feed means. Fluid under pressure is admitted to inflate the resilient tube and separate the wires whereby the composite cable is easily flexed to position the tool head adjacent the workpiece whereupon the fluid pressure is turned off to rigidify the flexed composite cable to retain the tool head in the desired position and feed the tool therefrom.

ERRATUM

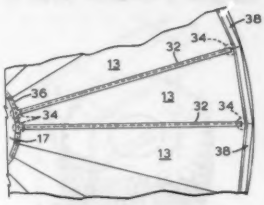
For Class 51—287 see:
Patent No. 3,740,904

3,740,902
MEMBRANE ROOF STRUCTURE

Donald Alexander Sinoski, 127 Bishop Avenue, Willowdale, Ontario, Canada

Filed Apr. 12, 1971, Ser. No. 133,275
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 **14 Claims**

A membrane roof is adapted to assume a curved shape. The roof comprises a plurality of segments of steel each attached to the segment next adjacent it by a steel expansion joint member which is formed from a convoluted steel sheet. The

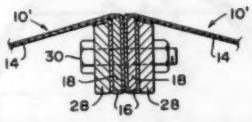


membrane roof may be air supported, or it may be suspended, and in either case it assumes a curved shape; or it may be a floating roof in a tank, in which case it is substantially flat but is adapted to be suspended when the tank is emptied. The membrane is attached entirely around its periphery to a supporting structure which may be a substantially circular ring formed of a plurality of sections of steel pipe or a ring formed of reinforced concrete. Very wide clear span roofs may be constructed using the membrane roof.

3,740,903
FLEXIBLE STRUCTURAL PANEL

William W. Ahern, Belmont, Mass., assignor to Geometrics, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 44,423, June 8, 1970, abandoned. This application Mar. 27, 1972, Ser. No. 238,606
Int. Cl. E04b *7/10*; E04c *1/24*
U.S. Cl. 52—81 **3 Claims**



Means for supporting and joining flexible multi-sided structural panels in radomes and the like. The panels are each provided with flexible peripherally located flaps which are reinforced by stiffening members. The panels are applied to frames made up of interconnected rigid struts, with the flaps and their respective stiffening members overlapping the struts. The frames are interconnected by means extending laterally through joints including as sandwiched elements two peripheral flaps in face-to-face contact, the stiffening members reinforcing said flaps, and a strut on each of the frames being interconnected.

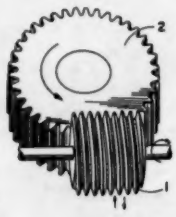
3,740,904
METHOD OF HONING GEAR TEETH WITH A RESILIENT WORM-SHAPED HONE

Masato Ainoura, Kitashigeyasu, Japan, assignor to Tsukihoshi Gomu Kabushiki Kaisha, Fukuot-ka-ken and Kabushiki Kaisha Koshifuji Tekkosho, Kyoto-shi, Japan

Division of Ser. No. 74,973, Sept. 24, 1970. This application Oct. 28, 1971, Ser. No. 193,267
Int. Cl. B24b *1/00*
U.S. Cl. 51—287 **3 Claims**

A worm-shape or screw-shape hone, for honing gear teeth, has the tooth profile of the basic rack at its normal plane. The hone is formed by molding synthetic polymers in which there are dispersed abrasive particles, to provide a Shore hardness of 15° – 75° and a Young's modulus $0.5 - 70 \times 10^3$ kg/cm². The hone is engaged with the gear to be finished and is rotated by a

motor with the hone driving the gear. During honing of the gear, the hone is fed parallel to the axis or tooth trace of the gear over the whole face width of the gear. The polymer material may comprise a co-cured blend of polyurethane



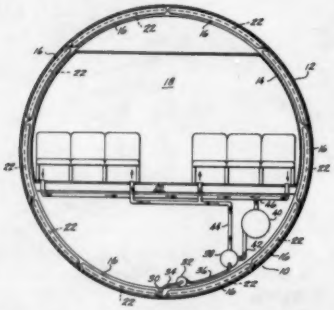
rubber and epoxy resin having a suitable flexibility, good resiliency and high abrasion resistance, and the abrasive particles may comprise alundum or carborundum, the abrasive particles being exposed at the working surface of the hone.

3,740,905

INSULATION AND CONDENSATION CONTROL SYSTEM

Clarence R. Adams, Kirkland, Wash., assignor to The Boegin Company, Seattle, Wash.

Filed Dec. 22, 1971, Ser. No. 210,882
Int. Cl. B64c *1/00*; F24f *3/14*
U.S. Cl. 52—173 **7 Claims**



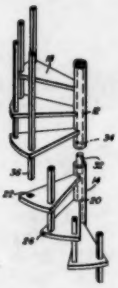
In a climate controlled chamber, an insulation system for controlling condensation of water vapor and for channeling the condensate to a central collection point. The preferred embodiment involves an aircraft fuselage having specially constructed insulation blankets arranged in overlapping fashion in close proximity to the exterior skin of the fuselage. Each blanket has a sandwich construction comprising a centrally located corrugated metallic foil member surrounded by layers of insulating material such as glass fiber mat. The insulating materials are of predetermined thicknesses to maintain the metallic foil member within a temperature range wherein it will act as a condenser plate for water vapor. The corrugations of the foil member are vertically aligned and spaced from the insulation material on the interior side such that vertical drain passageways are formed to allow draining of the condensed water. The drain passageways turn outwardly toward the fuselage exterior skin at the lower end of each of the blankets to thereby direct the water out of the blanket and downwardly along the interior of the skin to a central collection point at the bottom of the fuselage for optional recycling through a humidifier system, or removal from the aircraft.

3,740,906

PRECISION SPIRAL STEEL STAIRCASE

Otto Schneider, 9204 Hines Road, Baltimore, Md.

Filed Sept. 17, 1971, Ser. No. 181,534
Int. Cl. E04f *11/00*
U.S. Cl. 52—187 **8 Claims**



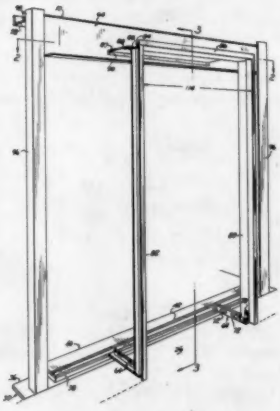
A rigid, stackable spiral staircase unit comprised of a hollow center support column, a plurality of horizontal steps welded to the support column, a pair of balusters welded to each step and connecting the adjacent steps, and a handrail welded to the top portions of the balusters in the form of a spiral. The end of the support column is provided with a mounting pin for journaled engagement with the column of an adjacent staircase unit such that several units may be conveniently stacked or nested together at the point of installation to provide a staircase of desired height.

3,740,907

GAUGE FRAME FOR ELEVATOR SHAFT ENTRANCE OPENING

Charles M. Loomis, Box 453, Arkansas City, Kans.

Filed Aug. 27, 1971, Ser. No. 175,646
Int. Cl. E06b *1/04*; B66b *13/08*
U.S. Cl. 52—205 **6 Claims**



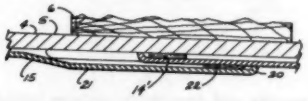
A rectangular main frame has uprights resting upon and bolted to a shelf formed by a horizontal angle beam or corbel

installed in the elevator shaft or hatchway below the floor level and at the intended location for the corridor entrance wall opening into the elevator shaft. Extending between the upper ends of the uprights is a top hanger head which subsequently supports the trackway for the corridor entrance door or doors. Also secured to the angle member is a corridor entrance sill support having secured thereto spaced parallel channel brackets projecting outward therefrom and containing pairs of keyhole slots in their vertically extending webs. A rectangular gauge frame having an inner opening substantially equal to the external dimensions of the finished entrance opening structure has side plates which at their lower ends carry headed bolts and studs adapted to fit into the keyhole slots. The gauge frame also has a top plate bolted to the main frame and having a width substantially equal to the intended thickness of the corridor wall. After the wall masonry has been completed up to the gauge frame, the finished entrance opening structure is slid into place with the heads of its bolts and studs inserted through the enlarged ends of the keyhole slots and their shanks then moved into the narrowed portions of the keyhole slots, whereupon the tightening of the bolts secures the finished entrance opening structure permanently but removably in position within the gauge frame.

3,740,908
WALL PANELING

John W. Moore, Creve Coeur, Mo., assignor to Swan Corporation, St. Louis, Mo.

Filed Jan. 11, 1971, Ser. No. 105,248
Int. Cl. E04b *1/00*
U.S. Cl. 52—261 **9 Claims**



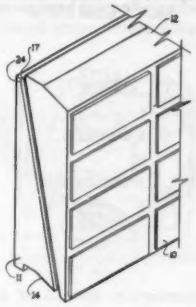
An assembly of interfitting wall panels adapted for covering the surfaces of perpendicularly disposed walls; and being so constructed as to permit of relative adjustment for accommodating walls of varying extent while obscuring any imperfections in intervening joints. Said paneling may be easily and securely mounted upon any conventional support structure.

3,740,909
PREFORMED BUILDING PANEL WITH WEATHERPROOF SEAL

Mathias Ludwig Stinnes, Toronto, Ontario, Canada, assignor to Du Pont of Canada, Limited, Montreal, Quebec, Canada

Filed Feb. 25, 1971, Ser. No. 118,852
Int. Cl. E04c *2/20*; E04b *1/70*
U.S. Cl. 52—302 **6 Claims**

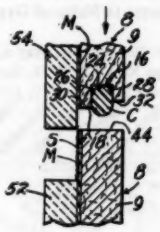
A wall panel having front and rear surfaces and horizontal and vertical side surfaces which are adapted to mate with side surfaces of similar panels is provided. Each of the mating side surfaces contains an element of a groove and ridge joint extending throughout the side surface. The groove element of the joint is recessed beyond the extremity of the ridge element so that, when the panel is mated with a similar panel, the ridge and groove elements cooperate to form a cavity which acts as a capillary break and is connected to the front surface of the panel to permit drainage of any water that accumulates between the panels. A rectangular shaped preformed panel with a rigid foamed plastic core, an exterior face comprising staggered rows of brick veneer bonded to the core and an interior rigid backing is disclosed.



3,740,910
SIMULATED BRICK PANELS

L. James Taylor, and Charles E. Nichols, Jr., both of Augusta, Ga., assignors to Merry Companies Incorporated, Augusta, Ga.

Filed Nov. 1, 1971, Ser. No. 194,276
Int. Cl. B44f *7/00*
U.S. Cl. 52—315 **19 Claims**

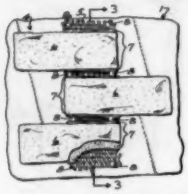


A simulated brick panel that can be applied to any type building structure to give the appearance of full-size masonry construction. The panel includes a dense backing sheet coated with a uniform layer of water-impermeable epoxy resin adhesive and faced with several courses of thin facing slabs. The panel has longitudinal upper and lower edges and transverse side edges, one of the longitudinal edges and one of the side edges being plain and the other longitudinal edge and side edge each having a central caulking groove cut therein with the side wall of the groove adjacent the inner side of the panel of less height than the height of the groove side wall adjacent the outer side of the panel. The bottom course of slabs projects below the lower edge of the panel so that the slabs will partially overlie the upper part of a panel therebeneath. Caulking compound in excess of that required to fill the grooves is applied so that it can flow laterally toward the inner and outer faces of the panel as the upper panel is pressed downwardly against a lower panel and laterally against the end of an adjacent panel. All exposed portions of the joints between the panels are sealed with adhesive, and then sand is applied thereto before the adhesive sets. The blank spaces at the vertical joints between adjacent panels, when present, are filled by adhesively bonding a flat filler slab in place. Blank spaces in the panels at the corner of a building are filled by similarly applying L-shaped filler slabs.

3,740,911
BRICK VENEER WALL CONSTRUCTION

James D. O'Leary, 11345 N. Valley Road, Mequon, Wis.

Filed Apr. 5, 1971, Ser. No. 130,908
Int. Cl. E04f 13/14
U.S. Cl. 52—388 7 Claims

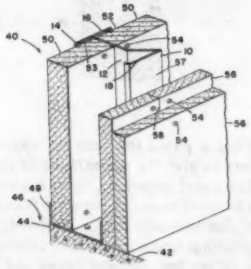


A brick wall construction formed of a series of panels secured to a wall surface. Each panel including a backing strip of open construction, such as expanded metal mesh, and a series of rows of thin bricks are bonded to the mesh by a resin adhesive. Ends of bricks in alternate rows project beyond the side edge of the backing strip while the corresponding ends of bricks in rows between the alternate rows are positioned generally flush with the side edge of the strip so that the area between the projecting alternate bricks provide a space to receive the projecting end of a brick of the next adjacent panel. The panels are secured to the wall surface by fasteners which extend through the backing strip between the bricks, and after installation, the joints between the bricks are filled in with grout.

3,740,912
FIRE RETARDANT SHAFT WALL

Gale E. Sauer, Williamsville, and Carl R. Mapes, Kenmore, both of N.Y., assignors to National Gypsum Company, Buffalo, N.Y.

Continuation of Ser. No. 34,656, May 5, 1970, abandoned.
This application Nov. 12, 1971, Ser. No. 198,483
Int. Cl. E04b 2/30, 2/78
U.S. Cl. 52—479 9 Claims



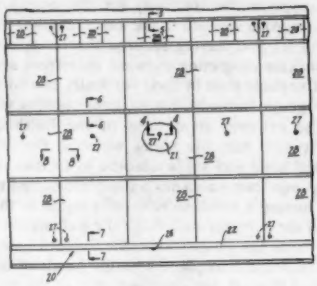
A wall construction adapted for enclosing an elevator shaft particularly suited for erection solely from one side thereof and resistant to normal distortions resulting from the heat of fire within the shaft.

3,740,913
LOCK GROOVE TILE

Jennie E. Musser, 5988 Martinus St., Route 2, Haslett, Mich.

Filed July 27, 1971, Ser. No. 166,402
Int. Cl. E04f 13/08
U.S. Cl. 52—387 1 Claim

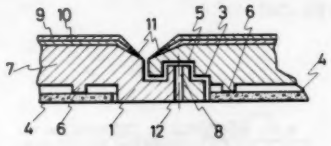
A lock groove tile of generally square outline having tongues on two adjacent sides and grooves on the other two adjacent sides for interlocking with adjacent tiles. A metal sheet is secured to the wall to be tiled and the sheet has edges adapted to cooperate with the respective tongues and grooves of the tiles to support the edges of the groups of tiles. In a modified form of the invention a metal strip is formed to interfit with a row of tiles and has a finished chrome strip covering the edges of the tiles.



3,740,914
TILE FOR COATING AND DECORATING SURFACES

Jose Arnaiz Diez, Clunia 17 10B, Burgos, Spain

Filed Nov. 4, 1970, Ser. No. 86,673
Claims priority, application Spain, Nov. 6, 1969, 373,229
Int. Cl. E04b 1/82; E04f 13/08
U.S. Cl. 52—515 2 Claims



A tile for coating and decorating surfaces includes a slab which is of rigid material of light weight capable of adopting any polygonal shape having an even number preferrably four sides. Ribs extend peripherally around the slab perpendicular to the rear surface thereof. Two adjacent sides of the slab each have a pair of identical projections extending therefrom. The projections are centrally perforated. The two other adjacent sides of the slab each have a pair of female recesses for coupling with the lugs of adjacent slabs to form the coating. The rear surface is provided with reinforcement ribs, which form an air insulating chamber. A plate of insulating material is located on the edges of the ribs. The top surface of the slab is bevelled and is coated with a colored sheet and a thin coating made of transparent and waterproof material which protects the top surface.

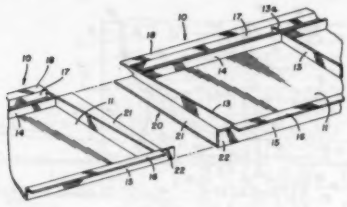
3,740,915
MOLDED SIDING

Robert E. Mollman, Moreland Hills, Ohio, assignor to Alside Inc., Akron, Ohio

Continuation-in-part of Ser. No. 863,492, Oct. 3, 1969, abandoned. This application Oct. 7, 1971, Ser. No. 187,338
Int. Cl. E04d 3/362
U.S. Cl. 52—531 4 Claims

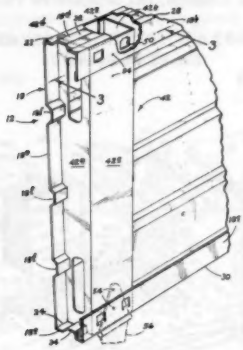
An elongated, one-piece laminated fiberglass molded siding component having a textured exterior surface and having a rearwardly projecting integral network of knife-like rib members that extend longitudinally and transversely thereof for

support and rigidification purposes. The siding is characterized by the fact that the thickness thereof varies throughout



for the dual purpose of adding strength in key areas and for the purpose of minimizing gaps in other areas of overlap, for example.

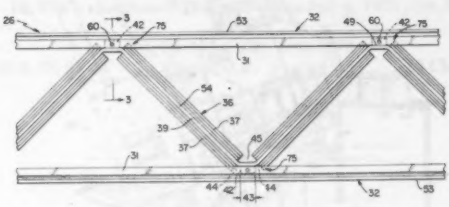
3,740,916
PANEL CONSTRUCTION
Paul E. Kenaga, 3429 S. E. Harold Court, Portland, Oreg.
Filed Mar. 24, 1971, Ser. No. 127,472
Int. Cl. E04c *2/08*
U.S. Cl. 52—629 **2 Claims**



A tab-connected panel including a substantially rectangular sheet of metal which has had its ooopsite edges bent over toward each other to form spaced-apart edge margins spaced outwardly from and overlying the central expanse of the sheet. An elongated stiffener extends laterally of the sheet with its opposite ends wedged in the spaces between the edge margins and the central expanse. Tabs formed in the edge margins are bent over and into openings in the stiffener to secure the sheet to the stiffener. A raised ridge is formed along one edge of the panel and a groove is formed along its opposite edge so that similar panels placed in edge-to-edge relation will interlock.

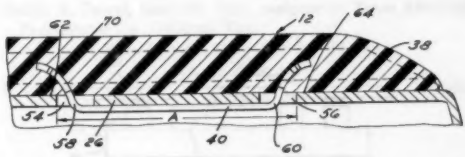
3,740,917
STRUCTURAL ASSEMBLY AND METHOD OF MAKING SAME
Lip F. Wong, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Oct. 20, 1971, Ser. No. 190,784
Int. Cl. E04c *3/07*
U.S. Cl. 52—694 **15 Claims**

A structural assembly and method of making same is provided wherein each assembly is comprised of a plurality of interconnected members each having at least one pair of resilient arms separated by a groove, and the groove is comprised of a pair of opposed serrated surfaces each defined by a cooperating plurality of parallel V-shaped grooves in an associated arm. At least one interconnecting member is provided having a pair of opposed roughly wedge-shaped portions each comprised of a pair of cooperating inclined surfaces with each inclined surface having a plurality of parallel V-shaped projections extending therefrom defining serrations thereon. The projections correspond in configuration to the V-shaped grooves in an associated interconnected member with the one



interconnecting member having at least parts of each of its wedge-shaped portions held in interlocked snap-fitted relation by the resilient arms of an associated interconnected member with the interlocking being achieved solely by relative movement of the one interconnecting member and associated interconnected member toward each other in a direction perpendicular to the V-shaped grooves.

3,740,918
DECORATIVE TRIM STRIP, FASTENER, AND METHOD OF MAKING SAME
Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Boston, Mass.
Filed June 23, 1971, Ser. No. 155,782
Int. Cl. B60r *13/04*
U.S. Cl. 52—717 **4 Claims**

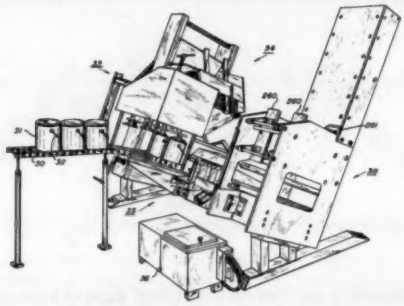


A decorative trim strip comprising an elongated channel-shaped base molding with a vinyl or other plastic decorative elongated trim piece adhesively secured to the base molding substantially throughout its length with fasteners projecting through the base molding at opposite ends of the trim piece with each fastener having a pair of tangs which are embedded in the trim piece and curled outwardly in situ therein without penetrating the decorative surface of the trim piece to retain the ends of the trim piece against the base molding preventing inadvertent end peeling of the trim piece from the molding. The method of constructing the trim strip and a fastener-applying gun are disclosed.

3,740,919
APPARATUS AND METHOD FOR ORIENTING AND CASE PACKING BAILED CONTAINERS
Raymond A. Heisler, 657 Dakota Trail, Franklin Lakes, N.J.
Filed Dec. 6, 1971, Ser. No. 204,892
Int. Cl. B65b *5/08, 35/56, 43/28*
U.S. Cl. 53—26 **38 Claims**

An apparatus and method is disclosed for receiving bailed containers in a single file array from a delivery conveyor and to orient said containers so that they are delivered by gravity in two groups of twos into an automatically erected carton. After filling the carton with four containers is advanced to a

closing, sealing and delivering mechanism. In this automatic mechanism the cartons for the case packing operation are placed in a delivery station from which they are advanced to an erecting station which is automatically actuated in response to the gravitational delivery of bailed containers to and



through the orienting apparatus. Alternate embodiments for elevating the glued and sealed cartons are shown from which the cartons may be delivered to a conveyor or pallet. The containers as they are arranged in the carton may have their bails facing into the corners of the carton or facing toward the center of the carton.

3,740,920

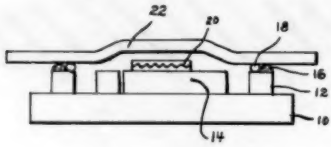
METHOD FOR PACKAGING HYBRID CIRCUITS

Clyde H. Lane, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 26, 1971, Ser. No. 147,095

Int. Cl. B65b *7/28*

U.S. Cl. 53—39 **1 Claim**



A method of packaging hybrid or semi-conductor circuit by using an aluminum O-ring which when placed under compression, at an elevated temperature, between a cap or lid and the mounting surface of a silicon oxide base, undergoes a dimensional change thereby preventing the flow of adhesive from contaminating the elements in the semi-conductor compartment.

3,740,921

DEVICE FOR CLOSING BAGS

Erich Meyer, Gailenkirchen, Germany, assignor to Optima-Maschinenfabrik Inhaber Dr. Max Buhler, Schwabisch-Hall, Germany

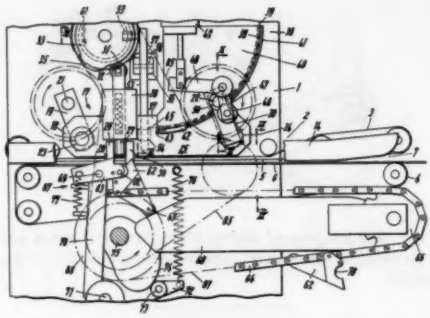
Filed July 28, 1971, Ser. No. 166,722

Claims priority, application Germany, July 29, 1970, P 20 37 689.0

Int. Cl. B65b *31/04*

U.S. Cl. 53—112 B **20 Claims**

The specification discloses an apparatus for gathering the necks of bags, such as plastic bags, and for applying a bendable closure member to the gathered neck. The closure member is cut off from a strip of material and is received in a device that moves in a circulatory path so that during one part of its travel it follows the bags during movement thereof. The device prebends the closure member and applies it to the



gathered neck of the bag and clenches the closure member about the neck, all during continued movement of the bag.

3,740,922

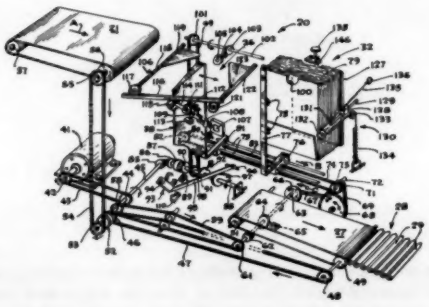
AUTOMATED SACK OPENING AND FEEDING APPARATUS

Weg-Yuan Liou, Chicago, Ill., assignor to Vaclovas Plioplys, Chicago, Ill.

Filed July 6, 1971, Ser. No. 159,687

Int. Cl. B65b *43/30*

U.S. Cl. 53—188 **9 Claims**



An automated sack opening and feeding apparatus for use in a retail checkout counter, comprising a counterheight intake conveyor for conveying goods to a checking station, a recessed loading station, a bag feeder for feeding paper sacks one-by-one to the loading station, and an opening mechanism for opening each sack in the loading station, first at the sack bottom and then at its top. A filled sack ejector, synchronized with the bag feeder, moves each loaded bag to a continuously running output conveyor that moves the bags to an off-load station.

3,740,923

WRAPPING ROLL DEVICE IN COIN-WRAPPING MACHINE

Masaru Itoda; Hirokuni Matono, and Masatoshi Ushio, all of Himeji, Japan, assignors to Kabushiki Kaisha Kokuei Kikai Seisakusho, Hyogo-ken, Japan

Filed June 28, 1971, Ser. No. 157,266

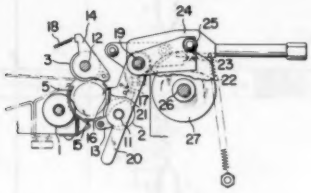
Claims priority, application Japan, July 1, 1970, 45/65952

Int. Cl. B65b *11/02*

U.S. Cl. 53—212 **1 Claim**

At least one of the wrapping rolls in a coin-wrapping machine has a reduced-diameter part intermediate between its

ends, two full-diameter parts thereby being left to project partially inward through respective cut-out openings in a corresponding wrapping-paper guide plate, a guide bridge being left uncut in the guide plate between the openings, and the



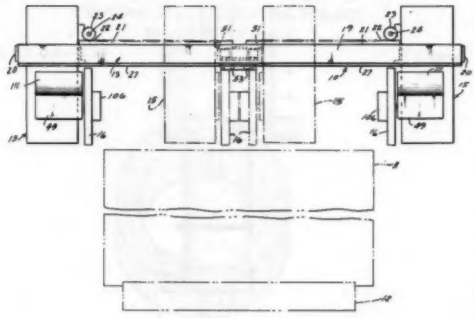
outer peripheral surface of the reduced-diameter part is positioned to confront the outer surface of the guide bridge, the inner surface of which functions to guide the leading edge of the wrapping paper and thereby to prevent the leading edge from entering and becoming caught in the openings.

3,740,924

RETRACTABLE OVERHEAD CRIMPER

James F. Becker, Wilmington, Del., assignor to Beloit Corporation, Downingtown Division, Downingtown, Pa.

Filed June 14, 1971, Ser. No. 152,744
Int. Cl. B65b 7/14
U.S. Cl. 53—380 **17 Claims**



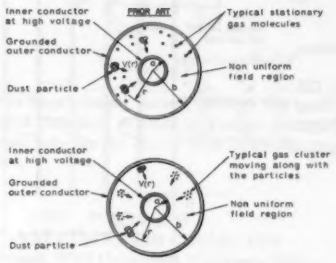
Apparatus for folding down and tucking in the ends of a wrapper extending beyond the ends of a roll of paper, by the use of rotatably driven crimper paddles. The roll is supported on two parallel spaced rolls rotatably driven to rotate the roll during crimping in a direction opposite to the direction of rotation of the crimping paddles. A cross beam is supported above the roll in a cross machine direction and has a separate crimper carriage for each end of the roll mounted to ride along the cross beam. The crimper carriages each have a telescopic arm carrying the crimper paddles at their lower ends, which can be retracted within the carriage to clear the maximum diameter of roll that can be wrapped, and to sit in the center of the machine when not in use. The crimper arms are lowered by power when at the center of the machine to within an inch of the roll. Lowering movement of the crimper carriages then stops. The crimper carriages are then moved outwardly beyond the ends of the roll and lowered with the crimper paddles positioned into crimping positions along the ends of the roll. The drive to the crimper paddles is then started and the roll is rotatably driven by its support rolls for little more than one revolution of the roll to completely tuck in the projecting end portions of the wrapper.

3,740,925

METHODS OF AND APPARATUS FOR SEPARATING SOLID AND LIQUID PARTICLES FROM AIR AND OTHER GASES

Nicholas Gothard, Dallas, Tex., assignor to Filteron International, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 793,224, Jan. 13, 1969, abandoned, which is a continuation of Ser. No. 629,465, April 10, 1967, abandoned. This application July 6, 1971, Ser. No. 159,690
Int. Cl. B03c 3/06, 3/40, 3/76
U.S. Cl. 55—5 **13 Claims**



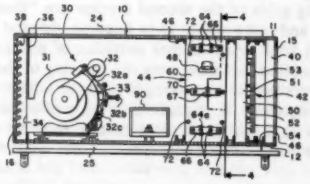
Processes and systems for separating solid and/or liquid particles from air or other gases in which the gas is caused to move with the particles dispersed in it to the highest intensity region of a non-uniform electrical field where the particles are collected.

3,740,926

PORTABLE ELECTRONIC PRECIPITATOR

Teddy A. Duval, Garland, Tex., assignor to Texas Electronic Precipitator Co., Garland, Tex.

Filed Dec. 15, 1970, Ser. No. 98,429
Int. Cl. B03c 3/66
U.S. Cl. 55—104 **5 Claims**



A two-stage type electrostatic precipitator mechanism is carried within a rectangular cabinet having an air intake at one end and an air outlet at the other. A blower mechanism is carried within the cabinet for moving air through the cabinet and past the ionizing wires and collecting plates of the precipitator mechanism. A power supply circuit provides high voltages for the ionizing wires and collecting plates and an indicator lamp is connected in circuit with such power supply circuit for providing an alarm signal when the collecting plates become too dirty. The spacing between the collecting plates and the value of the high voltage supplied thereto are of an unconventional nature and provide improved operating performance. The precipitator unit as a whole is constructed so that it can be operated in either a normal or an upside-down position.

3,740,927

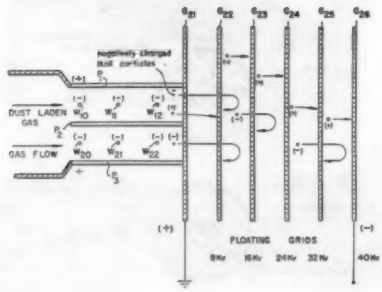
ELECTROSTATIC PRECIPITATOR

James Henry Vincent, Plainfield, N.Y., assignor to American Standard Inc., New York, N.Y.

Continuation-in-part of Ser. Nos. 804,050, Feb. 25, 1969, abandoned, and Ser. No. 869,195, Oct. 24, 1969, Pat. No. 3,616,606, and Ser. No. 65,843, Aug. 21, 1970. This application Nov. 2, 1971, Ser. No. 194,980

Int. Cl. B03c 3/09

U.S. Cl. 55—123 **6 Claims**



Covers an electrical precipitator composed of two tandem electrostatic sections arranged to eliminate dust or dirt or any form of particulate matter which may be conveyed with air or gas or any other fluid medium. The first section may, for example, include one or more pairs of positively charged vertical plates between each pair of which are positioned a plurality of negatively charged vertical wires, so that a Corona discharge may be developed between the vertical wires and the two parallel plates of each pair to electrically charge the particulate matter transmitted between the vertical plates. The second section, which is contiguous to the end of the first section and constitutes an add-on for the first section, includes a plurality of metallic grids which are parallel to each other, but perpendicular to the plates of the first section. The first and last grids of the second section may be connected to a source of voltage which does not create a corona field, and the remaining grids of the second section are "floated" between the first and last grids so as to become charged by voltage induced in such grids so that particles of matter entering the second section and traversing the opening of the various grids will respond to the electric field between adjacent grids and to the aerodynamic flow pattern developed between all of the grids, so that the particulate matter may be collected and removed from the fluid medium.

3,740,928

APPARATUS FOR ADSORBING CARBON DIOXIDE FROM AIR IN A STORAGE SYSTEM

Emmerich Schmid, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

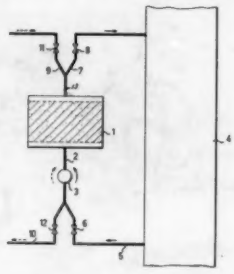
Filed Apr. 20, 1972, Ser. No. 245,817

Claims priority, application Switzerland, May 25, 1971, 7597/71

Int. Cl. B01d 53/04

U.S. Cl. 551—179 **3 Claims**

The system for circulating the air from the storage room and for regenerating the active solid adsorbent in the adsorption chamber includes a reversible blower and a series of check valves. The check valves alternately close off the adsorption chamber either from the storage room or from a source of desorbent while opening the chamber to the source of desorbent or the storage room, respectively. The check valves are controlled by the pressure of the air in the storage room and the pressure of the desorbent.



3,740,929

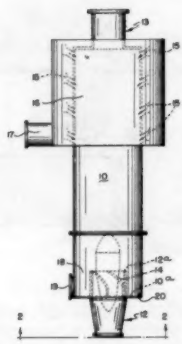
APPARATUS FOR COLLECTING FINELY DIVIDED STICKY MATERIAL

Mack Gordon, Medina, and John F. Phillippi, Mentor, both of Ohio, assignors to Aerodyne Development Corporation, Cleveland, Ohio

Filed June 14, 1971, Ser. No. 152,858

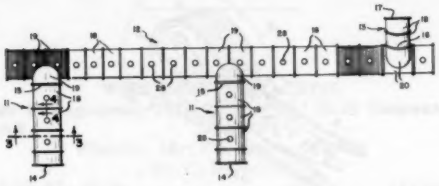
Int. Cl. B01d 45/12

U.S. Cl. 55—261 **1 Claim**



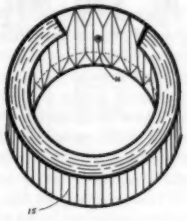
A modification of apparatus for separating fine particles from a gaseous fluid to provide means for classifying the fine particles is presented. The apparatus for separating particles from fluid is related to that disclosed and claimed in U.S. Pat. No. 3,199,268, granted Aug. 10, 1965 to Karl-Heinz Oehlrich et al. This prior invention involves a primary flow of particles entrained in a fluid medium generally axially of a cylindrical processing chamber from an inlet duct near one end to an outlet duct at the other end. A solid ground closes a portion of the chamber near the inlet duct save for an annular open space next to the wall of the chamber. A secondary circulatory flow is imparted to the fluid medium above the solid ground which causes the solid particles to be separated from the medium and to fall through the annular space into a collecting hopper. The modification of this invention does away with the collecting hopper and uses the bottom end wall of the processing chamber as a solid ground, and the inlet duct is extended above the bottom end wall to form a collecting chamber for the solid particles separated from the fluid medium in the processing chamber. A discharge duct for these solid particles leads tangentially out of the collecting chamber.

3,740,930
CORRUGATED BALLOON FLUE
John T. Cullom, 628 6th Avenue, San Manuel, Ariz.
Filed Apr. 28, 1971, Ser. No. 138,252
Int. Cl. B01d 45/12
U.S. Cl. 55—269 8 Claims



A plurality of standardized flue sections or modules of double wall construction are assembled together to form a complete flue assembly for hot smelter gases. Each flue section comprises a pair of generally annular end flanges spaced a predetermined standard distance apart, an inner wall of corrugated corrosion resistant sheet metal extending between and secured to the facing surfaces of the two end flanges, an outer wall of corrugated sheet metal also secured to the end flanges and spaced a predetermined distance radially outwardly of the corrugated inner wall, and means for connecting the end flanges of one flue section to the abutting end flanges of adjoining flue sections.

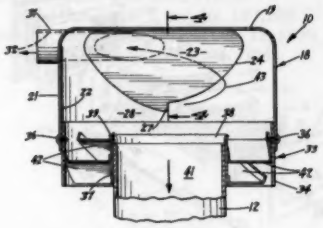
3,740,931
AUTOMOBILE AND TRUCK CARBURATOR AIR INTAKE FILTERS
Raymond M. Nowicki, 30 Linn Road, Nutley, N.J.
Filed Dec. 15, 1971, Ser. No. 208,075
Int. Cl. B01d 35/14
U.S. Cl. 55—274 1 Claim



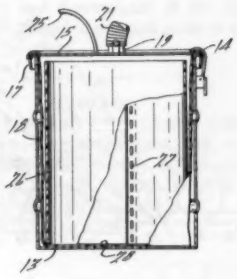
An annular pleated filter element with a anti-pollution warning air whistle cavity resonator compression flange device secured to the filtering paper through an aperture within a pleat.

3,740,932
AIR PRE-CLEANER
Lewis A. Borsheim, Fargo, N. Dak., assignor to Ross K. Petersen, Minneapolis, Minn.
Filed May 10, 1971, Ser. No. 141,758
Int. Cl. B01d 45/12
U.S. Cl. 55—394 12 Claims

An air pre-cleaner mounted on the air intake pipe of an internal combustion engine and connected to an exhaust aspirator mounted on the engine exhaust pipe. The pre-cleaner has a cylindrical housing having an air inlet for circumferentially directing air and foreign materials to a separation chamber. A plate baffle having a peripheral edge portion spaced from the inside wall of the housing separates a low pressure chamber from the separation chamber. A clean air exit passage, coupled with the air intake pipe of the engine, opens into the center of the separation chamber. The aspirator withdraws air from the low pressure chambers over the top of the baffle whereby air is continuously moved through the housing in a circumferential direction separating foreign materials from the air moving into the air intake pipe of the internal combustion engine.



3,740,933
VACUUM TRASH COLLECTOR
John R. Hollowell, 3567 Greenfield, Dearborn, Mich.
Filed June 7, 1971, Ser. No. 150,367
Int. Cl. B01d 45/18
U.S. Cl. 55—429 3 Claims

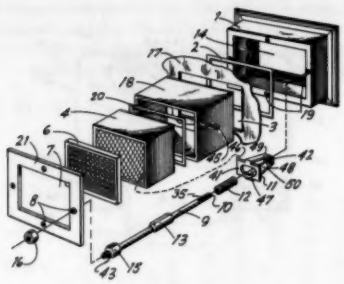


A vacuum trash collector having a device for restraining the movement of a plastic bag used therein. A rigid cylindrical liner is slipped inside the bag and this assembly then placed in the trash collecting bin. During operation, the liner will prevent the plastic bag from collapsing and blocking air flow. When the bin is filled, the liner may be slipped out of the bag and re-used. In one embodiment, the liner has an annular deflecting lip at one end.

3,740,934
AIR FILTERING UNIT INCLUDING A CLAMPING ASSEMBLY
Bernard R. Shuler, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed July 30, 1971, Ser. No. 167,649
Int. Cl. B01d 31/00
U.S. Cl. 55—490 9 Claims

An air filtering unit including a first flow-through support member, a flow-through filter assembly, a sealing gasket disposed between the support member and the filter assembly, a second flow-through support member for a protective grid in spaced alignment with said filter assembly, and a clamping assembly for holding the filter assembly in fluid tight communi-

cation with the first support members, the clamping assembly further communicating with the second support member for

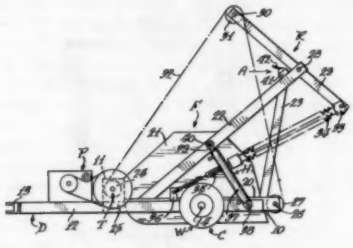


the protective grid for maintaining the protective grid in a preselected spaced alignment with the filter assembly.

3,740,935
GROUND ENGAGING BALER

James E. Gay, Vinton, Iowa, assignor to Starline, Inc., Harvard, Ill.

Filed Aug. 7, 1972, Ser. No. 278,522
Int. Cl. A01d *75/00*
U.S. Cl. 56—16.4 **5 Claims**



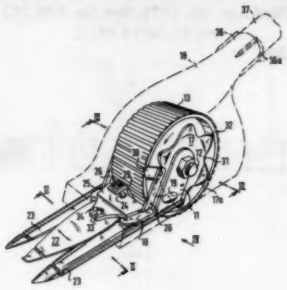
A hay bale rolling apparatus is adapted to be drawn along a windrow of hay behind a tractor to roll the windrow into a series of separate bales in contact with the ground. A wheeled chassis has parallel side beams with transverse pivot means forward of the wheels. A frame provided with bale forming means has its front end mounted on the pivot means. When a bale reaches a predetermined size, power means located behind the wheels tilts the frame upwardly about the pivot means to raise the rear of the unit and release the bale. The apparatus then returns to normal position to start a new bale.

3,740,936
LAWN CUTTING DEVICE IN PARTICULAR LAWN EDGE CUTTER

Julius Berger, Wuppertal-Cronenberg, Germany, assignor to Firma Julius Berger, Wuppertal-Cronenberg, Germany

Filed Nov. 30, 1971, Ser. No. 203,148
Claims priority, application Germany, Dec. 1, 1970, P 20 58 984.8
Int. Cl. A01d *55/00*
U.S. Cl. 56—246 **10 Claims**

A lawn mower comprising an immovable lower cutter and a cooperating swingable upper cutter, and a rotatably driven cylinder. A cam disc disposed integrally in each side of the cylinder and forms undulating control cam pivot planes, offset relative to each other. Control rollers cooperate with a plate pivoted to the frame driven by the cam discs for oscillat-

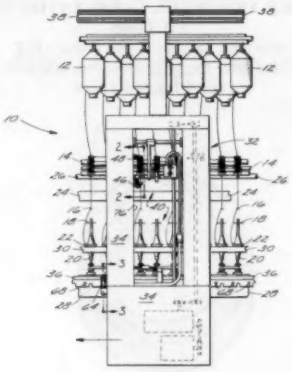


ing movement. The pivot plate operatively engages the upper cutter for swinging the latter for cutting cooperation with the lower cutter.

3,740,937
END-DOWN DETECTING MEANS FOR AUTOMATIC YARN PIECING APPARATUS

William H. Drake, Clemson, S.C., assignor to Maremont Corporation, Chicago, Ill.

Filed Oct. 26, 1971, Ser. No. 192,210
Int. Cl. D01h *15/00*
U.S. Cl. 57—34 R **16 Claims**



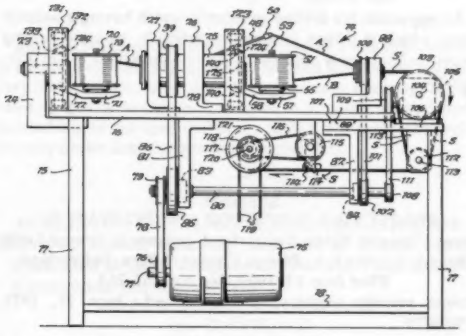
Firs and second photoelectric units mounted upon the carriage of an automatic yarn piecing apparatus movable along a textile spinning frame respectively detect whether the carriage is adjacent a yarn delivery zone of the spinning frame and whether yarn is present within each such zone. Variations from a pre-established norm in the photoelectric outputs of the units are converted into signals directed to a correlating circuit which includes a bistable memory device. The correlating circuit is effective to actuate a nand-gate type of control device that initiates a cycle of operation of the piecing apparatus when the carriage is in operative adjacent relationship to a yarn delivery zone wherein no yarn is detected. The correlating circuit may be temporarily disabled when desired, by inhibiting its memory device and as when the carriage of the piecing apparatus moves past an end of a spinning frame, to negate the possibility of a piecing operation being then inadvertently initiated. Inexpensive, durable and compact electrical components and circuits are employed to conserve space, to minimize manufacturing cost and maintenance, and to insure consistently reliable operation under adverse operating conditions. The successful use of a conventional phototransistor and light source in the photoelectric yarn-de-

tection unit is achieved by restrictively limiting the vision of the phototransistor to a particular area of the spinning frame and by subjecting its electrical output to high-gain amplification, preferably in the approximate order of 50,000 times, prior to signal-conversion thereof.

3,740,938
WIRE TWISTING MACHINE

John F. Kopczynski, 1671 Sweeney St., North Tonawanda, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,754
Int. Cl. D07b 3/04
U.S. Cl. 57—58.36 15 Claims

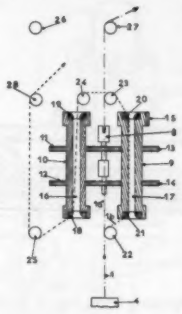


A wire twisting machine including a base, a wire winding frame rotatably mounted on the base, a first wire containing spool mounted on the base, a guide arrangement on the frame for receiving wire as it is uncoiled from said first spool, a second wire containing spool, mounting means for mounting said second spool rotatably on said frame so that the second spool may be held stationary while said frame rotates and carries the wire from said first spool around the second spool so as to twist the two wires to form a strand at a location remote from the frame, and magnetic means for controlling the position of the second spool including a selsyn unit including a stator mounted on said base and a rotor mounted on the mounting means so as to cause said second spool to remain stationary or to selectively move so as to rotate the wire being uncoiled therefrom about its longitudinal axis to compensate for any twisting of the wire, with the wire guiding means comprising a tube which extends into the space between the rotor and stator so as to be able to rotate with the frame without engaging the stator. Alternatively, the magnetic means may comprise a magnet mounted in spaced relationship to the mounting means for attracting magnetic material on the mounting means to thereby maintain the mounting means stationary while the frame rotates. A sensing arrangement may be associated with the mounting means to detect whether it moves more than a predetermined amount. Instead of the magnetic means, the mounting means may be of such a configuration that it is acted on by gravity to keep it in a relatively stationary position as the frame rotates. If desired, the first spool can also have a magnetic arrangement such as a selsyn unit associated therewith to impart a predetermined rotation to the first spool to compensate for any twist which the wire emanating therefrom has around its longitudinal axis, or alternatively, a mechanical feed may be provided to the first spool to affect such rotation.

3,740,939
MULTI-PURPOSE DEVICE FOR THE TEXTURIZING OF TEXTILE THREADS BY FALSE TWIST

Jacques Neveux, Riorges, France, assignor to Moulinage Et Retorderie De Chavanoz, Chavanoz, France

Filed Oct. 8, 1971, Ser. No. 187,798
Claims priority, application France, Oct. 12, 1970, 7037046
Int. Cl. D02g 1/02, 1/04, 1/06
U.S. Cl. 57—77.45 9 Claims

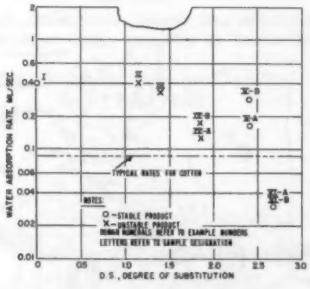


A multi-purpose device for texturing textile threads by application of false twist comprising a false twist tube having a cross-pin for engagement with a thread passing therethrough, a pair of rotatable cylinders having frictional inner surfaces for engagement with a thread passing therethrough, means mounting the false twist tube for rotation in tangential contact with the pair of rotatable cylinders, and thread guide means positioned upstream and downstream of the cylinders and tube for directing the thread in selected paths to and from the false twist tube and cylinders.

3,740,940
PLEXIFILIMENTARY CELLULOSE STRAND

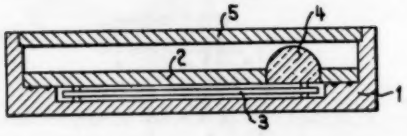
John Emmanuel Berkowitch, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 26, 1971, Ser. No. 192,194
Int. Cl. D02g 3/02
U.S. Cl. 57—140 R 6 Claims



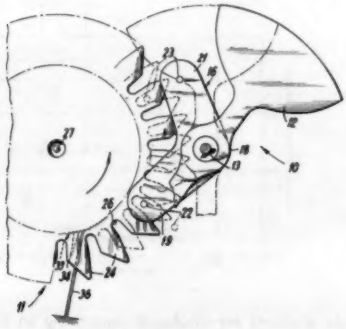
Textile products are disclosed comprising an assembly of fibrils in the form of a plexifilament, yarn, fabric or the like. The fibrils are of irregular cross-section and are composed of regenerated cellulose or cellulose acetate having a degree of substitution of between about 2.0 and 2.6. Most fibrils are interconnected to form a plexus. The products are stable to repeated water exposure and have a specific surface of at least about 0.4 square meter per gram and a fibril concentration of at least about 50×10^3 per square centimeter. The products have a water absorption rate of greater than about 0.1 milliliter per second and are useful in textile applications, particularly where good, stable water-absorption characteristics are desirable.

3,740,941
TIMEPIECE COMPRISING A NUCLEAR POWER SOURCE
Karl Adler, Grenchen, and Georges Ducommun, Feldbrunne, both of Switzerland, assignors to Biviator S.A., Grenchen, Switzerland
Filed Feb. 8, 1971, Ser. No. 113,250
Claims priority, application Switzerland, Feb. 23, 1970, 2552/70
Int. Cl. G04c 3/00; G04b 37/02
U.S. Cl. 58—23 BA 3 Claims



A timepiece comprising a nuclear isotopic power source enclosed in a calotte sealed by a cover. A protecting plate is disposed at a distance from said cover, and at least a part of the mechanism of the timepiece is accommodated in the space between said cover and said protecting plate.

3,740,942
LOW AMPLITUDE INDEXING MECHANISM FOR HOROLOGICAL INSTRUMENTS
Paul Wuthrich, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.
Filed Jan. 28, 1971, Ser. No. 110,500
Int. Cl. G04c 3/04; G04b 15/00
U.S. Cl. 58—28 R 3 Claims

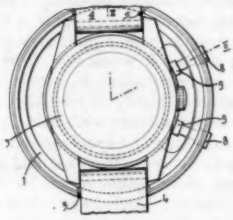


A horological instrument such as an electric or electronic watch includes an indexing mechanism or dial train drive for transmitting power from an oscillating balance wheel to an index wheel. The index wheel drives the gear train of the watch and is in turn coupled to the watch hands. The indexing mechanism comprises a direct drive arrangement wherein the index wheel is driven by means of pins mounted on a plate which is fixed to the balance staff.

3,740,943
APPARATUS FOR DRIVING AN ELECTRIC WATCH
Kinji Fujita, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed June 30, 1971, Ser. No. 158,349
Claims priority, application Japan, July 7, 1970, 45/58952
Int. Cl. G04c 3/04; H02k 33/16; H03b 5/20
U.S. Cl. 58—28 A 3 Claims

An apparatus for driving an electric watch having a balance wheel which is driven electro-magnetically, wherein driving current is alternately applied in opposite directions to the driving coil.

3,740,944
PROTECTIVE CASING FOR A WRIST-WATCH
Pierre Chopard, Nidau, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Canton of Bern, Switzerland
Filed June 13, 1972, Ser. No. 262,263
Claims priority, application Switzerland, June 21, 1971, 9078/71
Int. Cl. G04b 43/00
U.S. Cl. 58—105 6 Claims



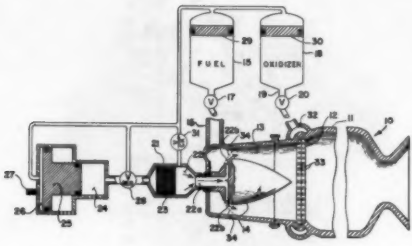
Protective casing for a wrist-watch particularly for use under rare or nil atmosphere conditions, said casing comprising a bezel and a bottom removably secured one to the other, the bottom having diametrically opposed recesses to accommodate passage of the wrist band of the watch and the bezel part having an aperture defined therein opening on the glass of the watch face. The casing functions to insulate the enclosed watch by reducing calorific exchanges by radiation when the watch is exposed to rare or nil atmosphere conditions. The surfaces of the casing parts are treated to maintain the ratio between the absorption and the emission of heat by radiation so that the temperature inside the casing does not go beyond −40°C in a given interval of time, and does not grow beyond 40°C in an unlimited time. The aperture defining portion may include a bearing edge surface engaging the glass of the watch face to prevent bursting thereof under vacuo environmental conditions. The bezel can carry a pair of push buttons operable upon the control pushers of a chronograph, if desired. A portion of the outer face of the bottom of the protective casing is anodized and colored.

3,740,945

INJECTOR FOR ROCKET MOTORS USING HIGH VISCOSITY FUEL

Joseph J. Lovingham, Madison, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Feb. 27, 1969, Ser. No. 802,833
Int. Cl. B63h *11/00*
U.S. Cl. 60—204 6 Claims



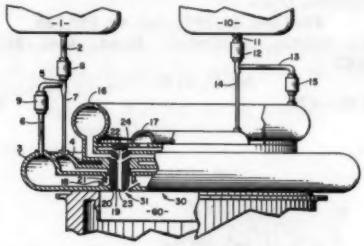
An improved injector for a rocket motor using high viscosity fuel is presented which assures smooth flow of the fuel and very little pressure drop despite the extreme viscosity. A high velocity gas is made to flow over a Coanda shaped body located within the head end of the rocket motor and the fuel is thereby drawn into the combustion chamber.

3,740,946

MOMENTUM EXCHANGE THROTTLING INJECTOR

Donald E. Welton, Calabasas, and John R. Hiland, Canoga Park, both of Calif., assignors to North American Rockwell Corporation, Los Angeles, Calif.

Filed Feb. 7, 1963, Ser. No. 258,373
Int. Cl. F02k *9/02*
U.S. Cl. 60—204 2 Claims



This invention relates to liquid rocket engines. More particularly, this invention relates to a throttling injector for varying propellant flow rates and consequently liquid rocket engine thrust levels over wide ranges.

3,740,947

HYPERGOLIC PROPELLANTS

Donald D. Denson, 130 B Cannonbury Court, Kettering, Ohio, and Francis M. VanMeter, 650 Montclair Drive, Lexington, Ky.

Filed Aug. 4, 1972, Ser. No. 277,955
Int. Cl. C06d *5/08*
U.S. Cl. 60—215 5 Claims

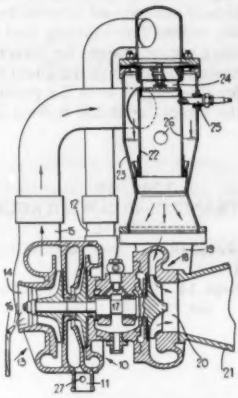
A method for bringing about the auto-ignition of dicyanfuroxan or dicyanofurazan by bringing these compounds in contact with hydrazine. Monomethylhydrazine, unsymmetrical dimethyl hydrazine, piperizine, piperdine or diethylamine. The resultant formulation provides an effective hypergolic bipropellant system for use in the propulsion of rockets.

3,740,948

HOT GAS GENERATOR EMPLOYING ROTARY TURBINE

Eric Kellett, London, England, assignor to C.A.V. Limited, Birmingham, England

Filed Apr. 8, 1971, Ser. No. 132,429
Claims priority, application Great Britain, Apr. 14, 1970, 17,561/70
Int. Cl. F02k *3/10*; F02c *7/18*
U.S. Cl. 60—261 1 Claim



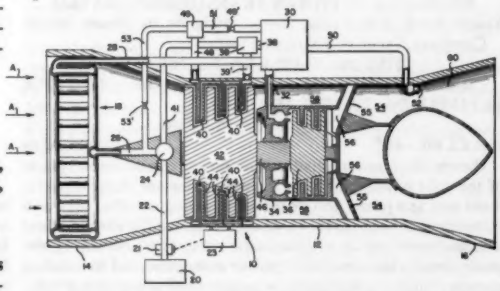
A hot gas generator includes a combustion chamber the heated gases from which drives a turbine the combustion chamber being provided with air/fuel mixture for burning therein by a compressor driven by the turbine. A second compressor is provided to supply dilution fluid in the form of an air/fuel mixture. The dilution fluid together with the heated gases leaving the combustion chamber are maintained at a speed which is higher than the flame speed and the combustion of the air/fuel mixture which constitutes the dilution fluid takes place in a second combustion chamber which includes a divergent portion whereby the velocity of the gases is reduced below the flame speed.

3,740,949

FUEL COOLED RAM AIR REACTION PROPULSION ENGINE

Robert L. Wolf, Chesterfield County, Va., and Rodney McGann, Northridge, Calif., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 20, 1963, Ser. No. 324,958
Int. Cl. F02k *11/00*
U.S. Cl. 60—267 4 Claims



1. A reaction propulsion system including means providing a combustion chamber having at its rearward end an impulse expansion outlet nozzle, means providing a ram air intake, means directing air from the ram air intake to the forward end

of the combustion chamber, a fuel storage chamber, indirect fuel heating heat exchange means in heat exchange contact with the ram air in said air directing means, means directing fuel through said heat exchange means, at least a single stage air compressor providing a portion of the air directing means between the heat exchange means and the forward end of the combustion chamber, a direct expansion turbine for driving said compressor, a further fuel heating heat exchange means, said further fuel heating heat exchange means following said at least a single stage of the air compressor and adapted to cool said air compressor compressed air prior to expansion of the compressed air, means for directing fuel through said further heat exchange means, means for directing at least a portion of the air heated fuel through the direct expansion turbine, and means for directing at least the portion of the fuel exhausting from the direct expansion turbine into the combustion chamber.

3,740,950

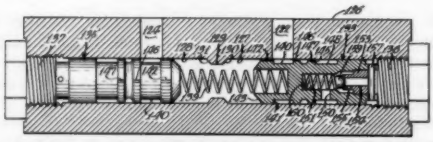
HYDROSTATIC TRANSMISSION WITH ACCELERATION CONTROL

David N. Polaski, Peru, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sept. 14, 1971, Ser. No. 180,301

Int. Cl. F15b *15/18*

U.S. Cl. 60—459 **8 Claims**



A reversible hydrostatic transmission including a pump, a motor, conduits connecting the pump and motor in closed circuit, means for varying the displacement of the pump in opposite directions from neutral, and an acceleration and deceleration control including a pair of valves communicating respectively with the pressure and return conduits and biased to open positions providing a bypass passage between the conduits for limiting the rate of pressure buildup in either conduit on acceleration or deceleration, together with means responsive to pressure buildup in one conduit on acceleration for moving the associated valve to a position closing the bypass and terminating the limit on pressure buildup.

3,740,951

HYDROSTATIC POWER TRANSMISSION SYSTEM

Yoichi Mori, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

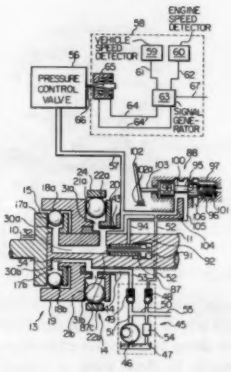
Filed Dec. 7, 1971, Ser. No. 205,634

Claims priority, application Japan, Dec. 28, 1970, 45/119982; Dec. 28, 1970, 45/119983

Int. Cl. F16h *39/16, 39/46*

U.S. Cl. 60—465 **10 Claims**

Herein disclosed is a hydrostatic power transmission system of the split power path type having a constant fluid displacement unit as a pump unit driven by a driving member such as a transmission input shaft of a motor vehicle and a variable fluid displacement unit as a hydrostatic motor unit driven by the pump unit by means of fluid power and connected to a driven member such as a transmission output shaft of the motor vehicle. The two fluid displacement units are interconnected by a fluid circuit, which in the prior art transmission systems is opened to drain off the working fluid when the motor vehicle stops and closed to restore the fluid pressure in the fluid circuit when the motor vehicle is to start. A fluid pressure control mechanism is thus connected to the fluid displacement units so that the fluid pressure in the fluid circuit is automatically reduced to zero level when the vehicle is brought to a full stop and gradually increased from the zero level as the motor vehicle is started and driven at a low speed whereby the shocks otherwise resulting from the abrupt variation in the driving



torque transmitted through the transmission system can be avoided. The transmission system is also provided with an arrangement adapted to interrupt the fluid path leading from the constant to the variable fluid displacement units during direct-drive condition in which fluid pulsation otherwise takes place in the latter unit to produce noises.

3,740,952

HYDRAULIC JACK FOR USE IN GARAGE

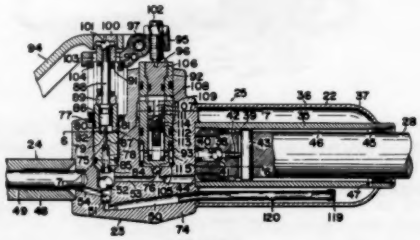
Yasuhiro Fujii, No. 140, Mitsu-Ikenami Unuma-cho, Kagamihara, Japan

Filed Dec. 21, 1971, Ser. No. 210,326

Claims priority, application Japan, Dec. 24, 1970, 45/116682

Int. Cl. F15b *15/22*

U.S. Cl. 60—477 **8 Claims**



A hydraulic jack is provided whose lift arm may be lowered at two different speeds, that is, high and low speeds. Release valves having low and high discharge capacities are interposed between a working oil supply and discharge passages of a hydraulic cylinder for lifting and lowering the lift arm, and in response to partial depressing of a foot pedal the low-discharge release valve is first opened, and when the foot pedal is fully depressed, both of the low and high discharge release valves are opened so that the working liquid under pressure may be discharged selectively in small and large quantities from the hydraulic cylinder.

3,740,953

HYDROSTATIC POWER TRANSMISSION SYSTEM

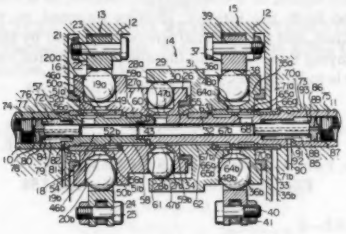
Yoichi Mori, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Dec. 27, 1971, Ser. No. 211,893

Claims priority, application Japan, Dec. 28, 1970, 45/119985

Int. Cl. F16h *39/16, 39/46*

U.S. Cl. 60—489 17 Claims



An improved hydrostatic power transmission is disclosed including first, second and third fluid displacement units, of which the first and second fluid displacement units are constructed as variable-displacement and constant-displacement units, respectively, while the third fluid displacement unit may be constructed either as a variable-displacement or as a constant-displacement unit as the case may be. The transmission system features split-power characteristics in which the second fluid displacement unit acts not only as a hydrostatic unit but as a mechanical reaction unit whereby the input power is split into two input and/or output components. The transmission efficiency is consequently increased to a significant extent in spite of the simple and small-sized construction of the transmission system. A typical practical application of the transmission system is motor vehicles including heavy-duty industrial vehicles in which powerful braking actions are required when they are to be stopped.

3,740,954

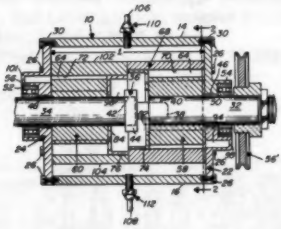
VARIABLE SPEED HYDRAULIC DRIVE MECHANISM

Thomas A. Young, Roselle, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 20, 1972, Ser. No. 236,001

Int. Cl. F16h *39/04, 39/46*

U.S. Cl. 60—489 8 Claims



A variable speed hydraulic drive system includes an outer housing having a block member mounted for movement in a predetermined direction therein. The block member includes a pair of eccentric, communicating cylindrical chambers formed therein; the axes thereof being perpendicular to the movement of the block member. A positive displacement vane-type rotor is mounted in each chamber on an independently rotatable shaft. The rotor shafts are coaxial. Porting plates are provided at the inner ends of the chambers to permit passage of hydraulic fluid from one chamber to the other. One of the rotor shafts is driven by a prime mover. Rotation of the shaft causes a corresponding rotor to carry quantities of hydraulic fluid introduced into a respective chamber to the other chamber to drive the second rotor at a predetermined speed of rotation. The shaft of the second rotor is connected to an alternator or the like device. Movement of the block member alters the fluid displacement in both chambers simultaneously to change the ratio of speeds of rotation of the rotors.

ERRATUM

For Class 60—542 see:
Patent No. 3,740,960

3,740,955

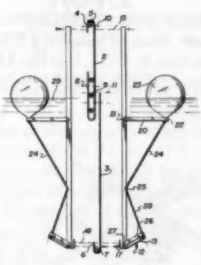
FLEXIBLE OIL BOOM FOR HIGH SEA

Robert A. Fossberg, Montreal, Quebec, Canada, assignor to Hurum Shipping & Trading Company, Ltd., Montreal, Quebec, Canada

Filed July 7, 1971, Ser. No. 160,488

Int. Cl. E02b *15/04*

U.S. Cl. 61—1 F 9 Claims



A flexible oil boom is described which has unique capabilities of being compactly stored and also being extremely stable in heavy seas. The boom includes a curtain wall of sheet material for deploying in a substantially vertical position in the water such that the upper edge is above the water surface and the lower edge is below the water surface. A plurality of substantially vertical stiffening members are positioned in spaced relationship along the length of the curtain wall, these members being arranged in opposed pairs with the curtain wall sandwiched between. Outrigger members are connected on each side of the boom a short distance below the water line and each outrigger has an inner end pivotally connected to a stiffening member and an outer end having a connector for connecting a float thereto. A restraining member allows the outrigger to swing between a downward retracted position adjacent the stiffening member and an operating position substantially perpendicular to the stiffening member. Keel members are pivotally connected to the lower ends of the stiffening members at both sides of the curtain wall and these keels are held by restraining members which allow them to swing between an upper retracted position adjacent the curtain wall and an operating position in which they are upwardly and outwardly inclined.

3,740,956

PORTABLE RETAINING STRUCTURE

Arthur L. Guy, Houston, and David E. Galloway, Simonton, both of Tex., assignors to Esso Production Research Company, Houston, Tex.

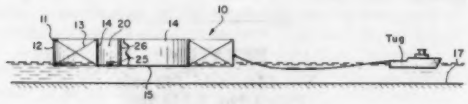
Filed Nov. 12, 1970, Ser. No. 198,127

Int. Cl. E02d *21/00*

U.S. Cl. 61—46.5 12 Claims

A portable marine structure for use as an artificial island and retaining support for fill material includes a tank member

having a base member and a wall member sealed to the base member and capable of being flooded with water and sunk in a body of water with flood water to be replaced by select fill material, that may or may not be frozen to resist ice forces against the retaining structure. The floatable structure also includes an outer shell having an outer wall member spaced from and surrounding the tank wall member and a truss



system connecting the tank wall member to the outer wall member. The outer shell is open at top and bottom. The artificial island structure is created by floating the marine structure to a desired water location, sinking the structure by flooding the tank with water and then anchoring the structure by filling the outer shell with fill material. When the structure is to be salvaged, it is floated by removing the fill material from the outer shell and removing water from the tank member.

3,740,957

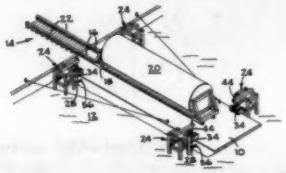
APPARATUS FOR STABILIZING A BARGE

Robert J. McKenzie, Bank of Salesburg Bldg., Galesburg, Ill.

Filed Feb. 8, 1971, Ser. No. 113,423

Int. Cl. E02b *3/20*; B63b *25/00*

U.S. Cl. 61—48 **7 Claims**



An apparatus for stabilizing a barge at a loading and/or unloading site includes a plurality of pilings with portions adapted for connection to a barge. The barge is also provided with connection means and means are provided for attachment to said connection means whereby the level of the barge can be adjusted in the water to a selected level.

3,740,958

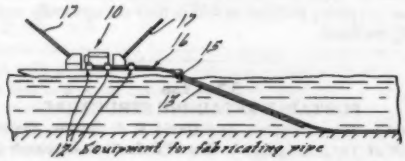
METHOD OF FABRICATING AND INSTALLING A SUBMERGIBLE PIPELINE

Sidney M. Cadwell, 436 Washington Road, Grosse Pointe, Mich.

Continuation-in-part of Ser. No. 782,966, Dec. 11, 1968. This application Jan. 19, 1971, Ser. No. 107,677

Int. Cl. F16l *1/00*; B31c *13/00*; B65h *37/00*

U.S. Cl. 61—72.1 **6 Claims**



This disclosure pertains to an improved method of continuously fabricating pipe for use in the transmission of fluids, or other flowable materials, between locations separated by an aqueous body, such as a shore location and an off-shore well. The method includes transporting the constituent materials for fabricating the pipeline on a pipe laying barge to the site wherefrom the pipeline is to be installed, and continuously fabricating the pipe on the barge while simultaneously installing the pipe on, or within, the bed of the body of water to the site whereto the pipeline is to connect. The pipe itself is comprised of a foundation tube of an oil and gas resistant polymer suitably strengthened by a selective number of additional layers of wire, cable, metallic strips or sheets, other polymeric layers, or a combination thereof, as is necessary to withstand both the internal stresses imposed by the transmitted fluid, and the external stresses imposed by the installation or laying technique and the under-water situs wherein the pipeline is to be located.

3,740,959

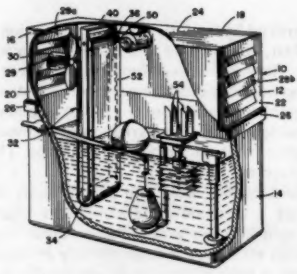
HUMIDIFIER-DEHUMIDIFIER DEVICE

Frank D. Foss, 830 North State St., Chicago, Ill.

Filed Sept. 16, 1971, Ser. No. 181,158

Int. Cl. F25b *21/02*

U.S. Cl. 62—3 **8 Claims**



A humidifier-dehumidifier device operates in combination with a water closet. The device includes a housing with a fan mounted therein. The fan blows air through water transfer means and cooling fins positioned within the housing. Control means alternatively energize the water transfer means to humidify the air, or the cooling fins to dehumidify the air. The water closet acts as a cycling water reservoir in the humidifying mode of operation and as a catch basin in the dehumidifying mode of operation.

3,740,960

ELASTIC PRESSURE FLUID DRIVEN MOTOR

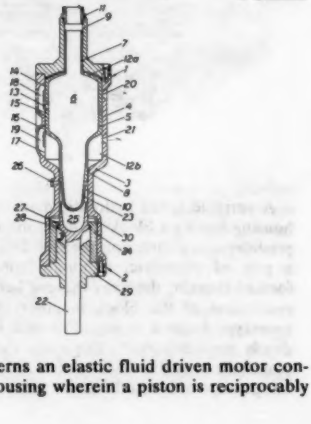
Eero Antero Erma, 23, Ottfjallsvagen, Klinten, Sweden

Filed Nov. 3, 1970, Ser. No. 86,580

Claims priority, application Sweden, Nov. 7, 1969, 15298/69

Int. Cl. F01l *21/02*

U.S. Cl. 60—542 **6 Claims**



The invention concerns an elastic fluid driven motor consisting of a cylinder housing wherein a piston is reciprocably

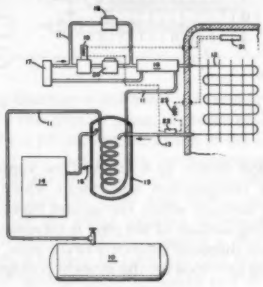
guided. The piston is hollow enclosing a surge chamber and acts as its own distributing valve. For reducing the stresses occuring in the piston it is recoiled at both its end positions by means of elastic fluid cushions. At the forward end position the piston is recoiled by apowertransmitting elastic fluid cushion and at its rear end position the piston is rebounded by an elastic cushion enclosed in a chamber formed in part by the piston during its return stroke.

3,740,961

OPEN CYCLE AMMONIA REFRIGERATION SYSTEM

Harry C. Fischer, Royal Oak, Md., assignor to Allied Chemical Corporation, New York, N.Y.

Filed May 22, 1972, Ser. No. 255,467
Int. Cl. F25b *19/00*
U.S. Cl. 62—7 **10 Claims**



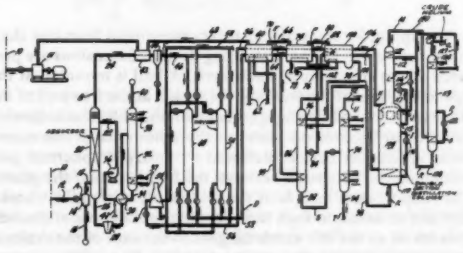
This invention provides an improved open cycle ammonia refrigeration system of the type wherein ammonia, supplied from a refillable storage tank, is employed as a refrigerant, and after serving as the refrigerant, is disposed of by combustion in a burner. The improved system includes, in parallel flow arrangement, a constant pressure expansion valve and means for regulating the flow of ammonia through the system. The regulating means includes a solenoid valve actuated by a thermostat in the compartment being refrigerated. The expansion valve permits a flow of ammonia sufficient to sustain combustion when the solenoid valve is closed. The regulating means prevents overload of the burner due to too rapid flow of ammonia through the system and prevents liquid ammonia from entering the burner.

3,740,962

PROCESS OF AND APPARATUS FOR THE RECOVERY OF HELIUM FROM A NATURAL GAS STREAM

Sin Chou Fan, East Lansing, Mich., assignor to Commonwealth Associates Inc., Jackson, Mich.

Filed Sept. 18, 1970, Ser. No. 73,300
Int. Cl. F25j *1/00, 3/00, 3/02*
U.S. Cl. 62—29 **3 Claims**



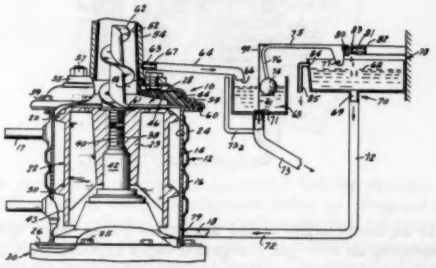
A process for recovery of helium from a natural gas stream containing components such as acid gases, moisture, hydrocarbons, nitrogen and helium. The process includes steps of feed gas preparation, refrigeration cooling and liquefaction, and separation of helium from the hydrocarbons and then nitrogen. Apparatus for carrying out the process is disclosed.

3,740,963

WATER CONTROL FOR ICE MAKER

John B. Lyman, Bloomington, and Phillip H. Turner, Inver Grove Heights, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 17, 1972, Ser. No. 244,536
Int. Cl. F25c *1/14*
U.S. Cl. 62—66 **9 Claims**



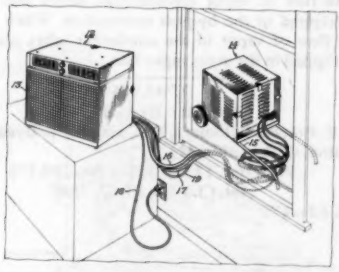
A method and means for controlling the water flow of a water using device such as an ice making device in which water is fed in excess of the capacity of the ice making device. The excess water vented from the device is received in a drain reservoir having means for restricting the drainage of the excess water. The amount of water fed to the ice making device is proportional to the amount of excess water received in the reservoir, and thus varies directly with the amount of water used by the device.

3,740,964

PORTABLE AIR CONDITIONER

Jack E. Herweg, Fort Worth, Tex., assignor to Tomeco, Inc., Fort Worth, Tex.

Filed June 14, 1971, Ser. No. 152,558
Int. Cl. F25d *19/02*
U.S. Cl. 62—262 **9 Claims**



A portable air conditioner comprising a cooling unit to be placed in a zone to be cooled, for example, a room of a house, and a refrigerant condensing unit to be placed outside of the zone. Located in the cooling unit is a heat exchanger and an air moving device. Located in the condensing unit is a compressor, a heat exchanger, and an air moving device. Flexible fluid conduits are provided for coupling the cooling unit to the condensing unit.

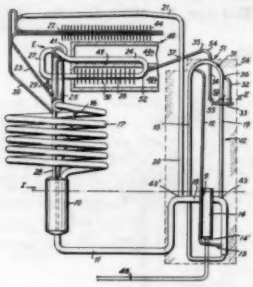
The two units have two ends respectively adapted to be locked together for forming a single unit. Storage space located between the two ends is provided for storing and concealing the flexible conduits when the two units are locked together.

3,740,965

APPARATUS FOR DEFROSTING COOLING UNITS OF ABSORPTION REFRIGERATION SYSTEMS

Wilhelm Georg Kogel, Lidingo, and Bernt Henry Roland Dahlqvist, Motala, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Claims priority, application Sweden, Oct. 8, 1970, 13626/70
Filed Oct. 6, 1971, Ser. No. 187,078
Int. Cl. F25b *15/10*
U.S. Cl. 62—278 10 Claims



In an hermetically sealed absorption refrigeration system employing an inert gas, refrigerant vapor expelled from solution in a generator by heating normally is conducted through a main vapor line to a condenser in which the vapor is liquefied and from which liquid refrigerant is conducted to an evaporator to produce useful refrigeration. From accumulating on the evaporator is melted by such expelled vapor which is diverted from the main vapor line and flows directly to the evaporator through a by-pass connection. The main vapor line and by-pass connection have places for collecting and trapping liquid resulting from condensation of the vapor and in which trapped liquid offers resistance to flow of vapor therethrough.

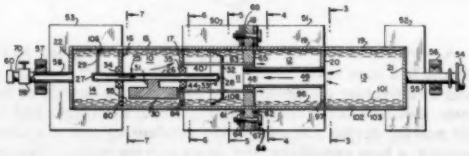
When the liquid trapped in the main vapor line offers sufficient resistance to stop flow of vapor therethrough, vapor is diverted from the main vapor line through the by-pass connection, such diverted vapor being capable of passing through any liquid in the by-pass connection and flowing to the evaporator to melt frost formed thereon. When vapor is diverted into the by-pass connection the pressure of vapor acting on the liquid trapped in the main vapor line is reduced which causes removal of liquid therefrom, thereby reducing the resistance it offers to flow of vapor therethrough below that offered by liquid trapped in the by-pass connection. When this occurs normal flow of vapor to the condenser takes place through liquid trapped in the main vapor line.

3,740,966

ROTARY HEAT PUMP

Milton F. Pravda, Baltimore, Md., assignor to Dynatherm Corporation, Cockeysville, Md.

Filed Dec. 17, 1971, Ser. No. 209,178
Int. Cl. F25b *15/02, 3/00*
U.S. Cl. 62—476 21 Claims



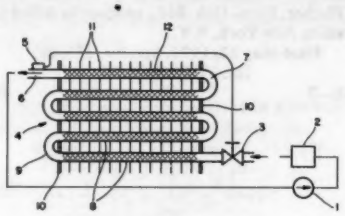
A heat-operated rotary heat pump is provided for use in air conditioning, particularly for cooling the passenger compartment of an automobile or other vehicle. It includes a generator, absorber, condenser, and evaporator, all mounted for rotation as a group. The device is capable of being made portable.

3,740,967

FORCED-FLOW VAPORIZER FOR COMPRESSION-TYPE REFRIGERATING EQUIPMENT

Zbigniew Ryszard Huelle, Sonderberg, Denmark, assignor to Danfoss A/S, Nordberg, Denmark

Filed Apr. 7, 1971, Ser. No. 131,913
Claims priority, application Germany, Mar. 23, 1970, P 20 12 808.3
Int. Cl. F25b *41/04*
U.S. Cl. 62—527 1 Claim



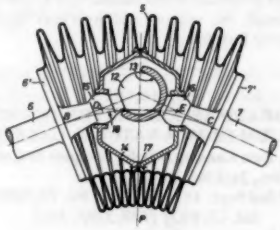
The invention relates to a forced flow vaporizer for compression type refrigeration equipment which vaporizer includes a pipe through which refrigerant flows. The effective outside radiating surface of the pipe is increased with fins and mesh inserts are disposed interiorly of the pipe, the fins and inserts only being provided for the straight portions of the pipe.

3,740,968

STABILIZED BELLOWS COUPLING FOR TRANSMITTING ROTARY MOVEMENT

Michel Orain, Conflans-Sainte-Honorine, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France

Filed Oct. 18, 1971, Ser. No. 190,107
Claims priority, application France, Nov. 10, 1970, 7040490
Int. Cl. F16d *3/52*
U.S. Cl. 64—11 B 11 Claims

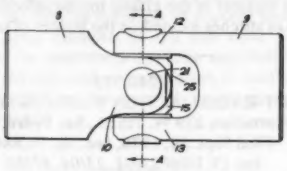


A coupling for transmitting rotary movement from one shaft to another with a bellow stabilizing device. Extensions are provided at the free ends of each shaft. A ball is mounted at the free end of one of the shafts and a socket at the free end of the other shaft for rolling engagement with the ball. The bellows is mounted at its ends on plates at the other ends of the extensions. A support case is mounted on enlarged spherical portion along the extension between the free ends and the plates. The support case maintains the middle pleat in radial translation and orientation such that the longitudinal axis of the bellows forms an arc of a circle tangent to the axes of the shafts at the plates securing the endmost pleats. In addition, lateral guides may be provided which bear against the support case and the extensions and support pleats intermediate the middle pleat the endmost pleats.

3,740,969
UNIVERSAL JOINTS

Brian Alfred Shotter, Romford, England, assignor to The Motor Gear & Engineering Company Limited, Romford, England

Filed May 7, 1971, Ser. No. 141,343
Int. Cl. F16d 3/33
U.S. Cl. 64—17 A 12 Claims

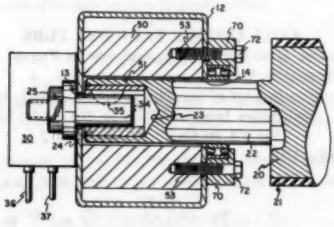


The drawing discloses a universal joint comprising two forks each providing two spaced arms, a center block having four locating members projecting therefrom in the form of a cross, the two arms of one fork having bores containing bearings in which one pair of the locating members are rotatably mounted and the two arms of the other fork having bores containing bearings in which the other locating members are rotatably-mounted, each locating member having a recess on its outer end for holding a supply of lubricant and there being a cap fitted over and spaced from the outer end of each locating member to direct lubricant from the recess to the bearing in which the locating member is mounted.

3,740,970
MOTOR TO SHAFT COUPLING TO PERMIT SELF-ALIGNMENT THEREBETWEEN

Donald K. Christian, and Ronnie L. Stafford, both of Spartanburg, S.C., assignors to Piedmont Engineering and Machine Company, Inc., Spartanburg, S.C.

Filed May 3, 1971, Ser. No. 139,594
Int. Cl. F16d 3/04
U.S. Cl. 64—31 10 Claims

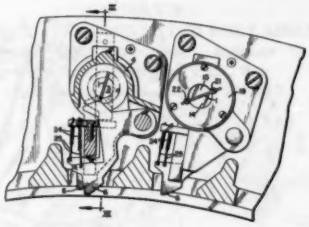


An improved self aligning coupling between a motor and an elongated shaft for direct driving of the shaft is disclosed. The improved system continuously permits self alignment between the motor and the driven shaft to drive said shaft without danger of damage to the motor. The motor drive shaft is rigidly keyed to the driven shaft while the motor per se is loosely secured to a support frame. The loose relationship between the motor and the frame is sufficient to produce torque while at the same time permitting limited motor movement for alignment purposes. Shock absorbers are provided for the motor to prevent damage thereto and to abate noise when torque is applied.

3,740,971
CONSTRUCTION OF JACK SELECTORS IN CIRCULAR KNITTING MACHINES

Jaime Trabal Font, Carretera de Barcelona, s/no., Mataro (Barcelona), Spain

Filed Dec. 30, 1970, Ser. No. 102,711
Claims priority, application Spain, Dec. 30, 1969, 375635
Int. Cl. D04b 15/74
U.S. Cl. 66—50 B 11 Claims

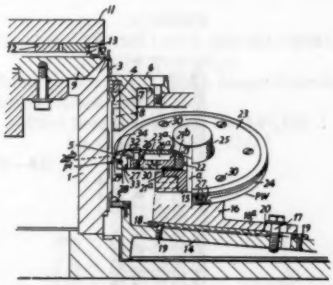


A jack selector device in a circular knitting machine in which a pair of elongated elements define an elongated slit rotatable in a cylinder. A key for making the jack selections is inserted into the slit and has opposite edges extending outwardly of the opposite sides of the slit. The opposite edges of the key have irregularities or teeth that correspond to two patterns of jack selection. The key is rotated so that the edges alternatively engage surfaces on jack selectors to actuate them from a rest position to an operative position in which they are actuated to execute the jack selection. The jack selectors are biased to their rest position by respective biasing springs.

3,740,972
PATTERNING WHEELS FOR WEFT KNITTING MACHINES

Terence Francourt St. Clair Langham, Leicester, England, assignor to Kroy Knitting Developments Limited, Leicester, England

Filed Apr. 19, 1971, Ser. No. 135,017
Claims priority, application Great Britain, May 2, 1970, 21, 180/70
Int. Cl. D04b 15/76
U.S. Cl. 66—50 A 6 Claims



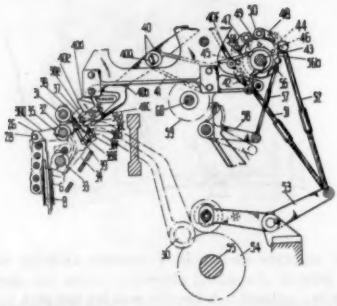
A rotary pattern wheel which effects selection of knitting instruments having butts in a weft knitting machine. Axis of wheel is inclined to these instruments and provided with tricks so inclined to radial planes of the wheel as to be parallel to said instruments. Each trick accommodates a bit having at least one protuberant butt-engaging formation, the bits being so arranged that their formations either act or do not act upon butts. The bits are supported by a common pivot ring so that each bit is turnable about this ring to selectively move a butt-engaging formation thereon to an operative or an inoperative position.

3,740,973

STRAIGHT BAR KNITTING MACHINES

Raymond Blood, and Eric Walter Marriott, both of Loughborough, England, assignors to William Cotton Limited, Loughborough, England

Filed Oct. 12, 1971, Ser. No. 188,257
Claims priority, application Great Britain, Nov. 19, 1970, 54,052/70
Int. Cl. D04b 11/04
U.S. Cl. 66—88 8 Claims



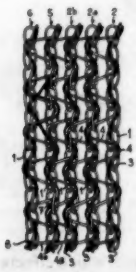
A straight bar knitting machine and method of forming thereon a rib border followed by loop transfers for changing to fashioned non-rib fabric, with loop doublings in the last knitted rib course, in which two groups of loop transfer points are used for the loop doublings and embody fashioning groups of points, with pattern controlled lever, trip and ratchet means for causing the fashioning groups of points and the remainder to be relatively displaced and held in and out of mutual alignment, and loop filling-up points associated with the groups of points to fill up holes during fashioning by widening.

3,740,974

ELASTIC RIBBON HAVING A BAND OF FANCY DESIGNS AND A METHOD OF MANUFACTURE OF THIS RIBBON

Alain Charles Bourgeois, Le Puy-Haute-Loire, France, assignor to Elastelle Paul Fontanille & Fils, Le Puy Haute-Loire, France

Filed Apr. 26, 1971, Ser. No. 137,544
Claims priority, application France, Apr. 30, 1970, 7016043
Int. Cl. D04b 23/06
U.S. Cl. 66—193 10 Claims



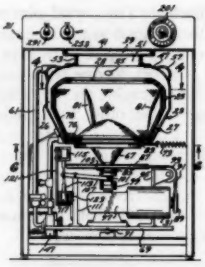
An elastic ribbon with fancy designs, especially intended for sewing on the edges of articles of underwear. The ribbon is produced on a straight drop-stitch loom and comprises two adjacent bands of elastic threads and non-elastic threads, one of said knitted bands being flat and uniform and having at least one elastic thread associated with a column of stitches, the other band being constituted by a succession of designs resulting from an association between at least two columns of stitches of non-elastic thread respectively associated with an elastic thread, and is coupled to said flat band by at least one non-elastic thread, in which the elastic thread of the column of stitches in the band of designs adjacent to said flat band has a length practically equal to that of the elastic threads of said flat band and smaller than that of the elastic threads of the other columns of stitches of said band of designs, at least one of the elastic threads of the columns of stitches of said band of designs being transposed here and there from the column of stitches with which it is associated and becoming integrated with one of the other columns of stitches of said band of designs, the transfer of the elastic thread affecting in all cases the column of stitches located on the border of said ribbon.

3,740,975

ROTARY-RADIAL ACTION WASHING MACHINE

George W. Cornelius, 279 W. 7th St., San Pedro, Calif.

Filed Sept. 30, 1970, Ser. No. 76,880
Int. Cl. D06f 23/02, 23/04, 37/20
U.S. Cl. 68—18 F 14 Claims



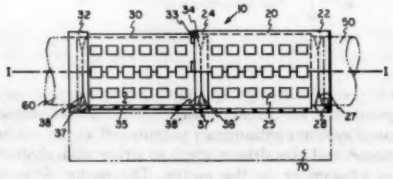
The present invention relates to a rotary washing machine which produces a radial flow washing action and includes a frame having a stationary tank mounted therein. A rotary inner basket is mounted within the stationary tank and is formed with a plurality of radially projecting passages for passage of washing fluid. Fluid directing means is interposed between the stationary tub and rotary inner basket for intercepting fluid propelled outwardly through such passages by centrifugal force to direct it back to the interior of the rotary tub for circulation back outwardly through the clothes and out through the passages to again be recirculated.

3,740,976

COLLAPSIBLE YARN DYE TUBE

Frank Fyans, Greenville, S.C., assignor to Fyans' Associates, Inc., Greenville, S.C.

Continuation-in-part of Ser. No. 158,729, July 1, 1971. This application Jan. 3, 1972, Ser. No. 214,673
Int. Cl. B65h 75/22; B05c 8/02
U.S. Cl. 68—198 15 Claims



An improved collapsible yarn dye tube assembly is disclosed comprising two tubular members, one of which telescopes an initial limited distance into the other. Both tubular members have an outer end and an inner end with the telescoping arrangement taking place at the inner ends thereof. A plurality of openings or perforations around the tubular members and

extending at least a major portion of the length thereof permit dye liquor to pass therethrough when yarn is wound around the dye tube and the package is placed in a dye kettle. The outer ends of the tubular members possess thickened wall portions so as to permit an abutting relationship between adjacent dye tubes whereby a solid relationship is established and whereby pressure transmitted from one dye tube to the next for collapsing thereof is evenly transmitted along the tube. Dye spindle alignment means are also provided on the inner periphery of the members to center the yarn package around the dye spindle. Alignment means may also be provided at the inner ends of the tubular members to prevent blockage of the perforations upon collapse of the dye tube. Further, the dimensions of the assembled dye tube establish driving contact between the tube and a winder drum at least at both outer ends and the middle of the assembly to improve winding the package produced.

3,740,977

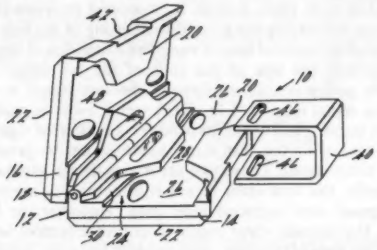
HANDCUFF COVER ASSEMBLY

Kaj E. Stefansen, 207 St. Louis Avenue, and Jack D. Cullip, 405 Marvin Avenue, both of Milan, Mich.

Filed July 27, 1971, Ser. No. 166,398

Int. Cl. E05b *75/00*

U.S. Cl. 70—16 **9 Claims**



A cover assembly which is applied to conventional handcuffs for the purpose of restraining prisoner hand movement for safety purposes. The cover assembly consists of a hinged body which is applied over the handcuff wristlets so as to form a rigid link therebetween which precludes relative rotational movement of the wristlets. The cover assembly also encloses the conventional wristlet locks on the handcuffs so as to positively prevent prisoner access to these locks.

3,740,978

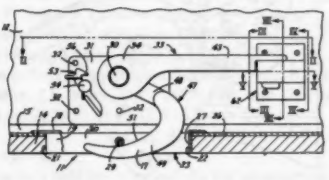
LATCH AND LOCK STRUCTURE

Vernon O. Smith, Ashley, and John W. Binns, Marion, both of Ohio, assignors to Overhead Door Corporation, Marion, Ohio

Continuation-in-part of Ser. No. 20,565, March 18, 1970, Pat. No. 3,642,314. This application Dec. 16, 1971, Ser. No. 208,861

Int. Cl. E05b *65/16*; E05c *3/10*

U.S. Cl. 70—100 **7 Claims**



A latch and lock structure for a door wherein the latch means includes a bolt and is pivotally mounted upon the door for movement around an axis substantially perpendicular to the plane of the door when it is in the closed position. The latch means has an end portion with a recess opening radially of said axis. A bracket is secured to the door for engagement by the latch means when it is in the latched position. The shackle of a padlock is secured to the bracket and the body of the padlock is in a locked position relative to said shackle when said body is in said recess and when said latch means is in said latched position.

3,740,979

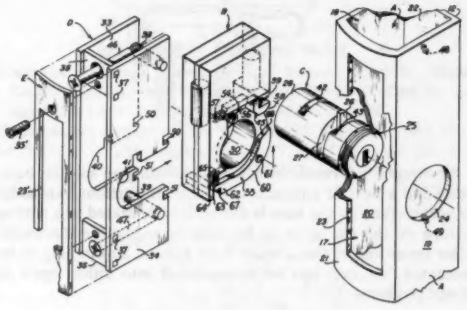
DOOR STILE LOCK AND LATCH BOLT ASSEMBLY

Alois Crepinsek, San Jose, Calif., assignor to Security Technology Corporation, San Jose, Calif.

Filed Dec. 22, 1971, Ser. No. 210,813

Int. Cl. E05b *65/06*

U.S. Cl. 70—139 **10 Claims**



A door stile bolt pivotally mounted on a lock containing cylinder and having bolt latching mechanisms interrelated with the lock for direct action by the latter for release and rotary movement of the bolt about the lock and cylinder between two extreme positions of locked and unlocked condition. The assembly of such bolt and lock containing cylinder within a recess formed within the door stile with a minimal exposure of the lock within the cylinder at the outer side of the stile and means for protecting the bolt and interrelated mechanisms between the bolt and lock against tampering and for affixing the cylinder containing the lock relative to the door stile.

3,740,980

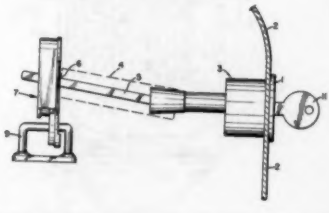
AUTOMOBILE TRUNK LOCK MECHANISM (ANTI-THEFT DEVICE)

Gregory Frank Schimizzi, and Ernest Joseph Schimizzi, both of 1563 76th St., Brooklyn, N.Y.

Filed June 2, 1971, Ser. No. 149,218

Int. Cl. E05b *63/00, 65/12*

U.S. Cl. 70—417 **1 Claim**



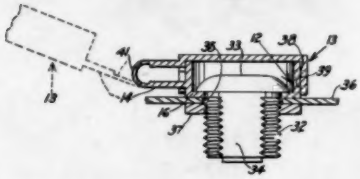
General consideration of the present invention is to provide a device which would prevent the unauthorized opening of an automobile trunk lock without the use of a key. The device is fashioned to conform to various automobile trunk lock

designs. The device offers protection by incasing the vulnerable areas of the lock, which if disturbed could result in the trunk's opening thus defeating the lock's purpose. The device is readily and economically fabricated from sturdy and durable material. The device requires no special care and no special knowledge for use by the user.

3,740,981
CLOSURE DEVICE FOR LOCKS

George P. Patriquin, Framingham, Mass., assignor to Hudson Lock, Inc., Hudson, Mass.

Filed Apr. 27, 1971, Ser. No. 137,755
Int. Cl. E05b *17/18;* **H01r** *13/44*
U.S. Cl. 70—455 **15 Claims**

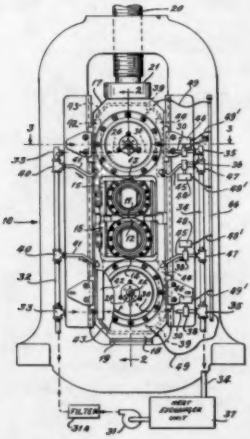


An integrally formed closure unit including an annular base, a cap and a flexible connector as member portions. An annular seal surface on the base is dimensionally mated to a mating surface on the cap so as to be slidably engagable therewith. After mounting of the annular base around an opening to be protected, the cap can be manipulated into either open or closed positions.

3,740,982
TEMPERATURE AND SHAPE CONTROL SYSTEM FOR ROLLING MILL ROLLS

Robert W. Hacker, Massillop, and Wyn E. McCoy, Canton, both of Ohio, assignors to The Timken Company, Canton, Ohio

Filed Nov. 4, 1971, Ser. No. 195,684
Int. Cl. B21b *37/10, 27/06*
U.S. Cl. 72—13 **7 Claims**

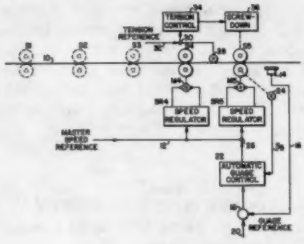


A temperature and shape control system for rolling mill rolls operable to extract heat or add heat to the roll ends of the back-up rolls to produce and maintain a heat balance and temperature gradient across the width of the roll bodies to maintain the desired roll shape for determining and improving the flatness of the product being produced in the rolling mill.

3,740,983
AUTOMATIC GAUGE CONTROL SYSTEM FOR TANDEM ROLLING MILLS

Robert S. Peterson, and John W. Cook, both of Williamsville, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 29, 1972, Ser. No. 230,284
Int. Cl. B21b *37/02*
U.S. Cl. 72—16 **9 Claims**

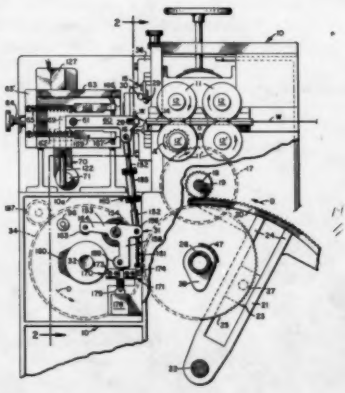


Method and apparatus for varying the gain of an automatic gauge control loop for tandem rolling mills wherein final output gauge is controlled by varying the speed of the last stand in the tandem mill, while tension is controlled between the last two stands by varying the screwdown setting of the last stand. The gain of the control loop is varied as a function of transport time between the bite of the rolls of the last stand and a thickness gauge positioned beyond the last stand. A gauge deviation signal measured in volts/percent error is multiplied by a last stand speed signal to produce a first error signal and by the square of the last stand speed signal to produce a second error signal. These two error signals are summed. At low speeds, the first error signal is effective to control last stand speed with reduced loop gain. However, at higher speeds, the second error signal becomes effective and increases the gain of the loop. Additionally, since the multipliers used to produce the first and second error signals may be inaccurate at very low speeds, the gauge deviation signal is also summed with the aforesaid two error signals and used to control the system at very low speeds.

3,740,984
SPRING-COILING MACHINE

Charles R. Bergevin, R.F.D. No. 2, Winsted, Conn.

Filed Jan. 4, 1971, Ser. No. 103,648
Int. Cl. B30b *15/00;* **B21f** *11/00*
U.S. Cl. 72—30 **18 Claims**



An automatic, spring-coiling machine of the gear-segment type in which the wire is fed into engagement with the coiling

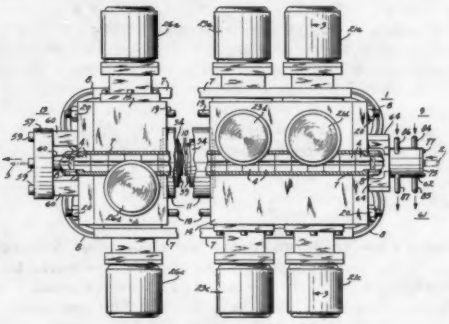
tools on each feed-stroke of the gear segment and having a cutter for severing the spring from the supply of wire at the end of the coiling cycle for each spring. The cutter may be de-activated in order to feed wire with more than one feed-stroke of the segment, and each of the coiling tools may be de-activated during any portion of the coiling cycle and then reactivated again at any point in order to make changes in the configuration of the spring anywhere along the length of the spring, as well as at its ends.

3,740,985

APPARATUS AND METHOD FOR CONTINUOUS EXTRUSION

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,542
Int. Cl. B21c *33/00*
U.S. Cl. 72—60 **82 Claims**



Four trains of gripping element quadrants are continuously propelled around four endless paths, meeting along one length of travel common to the four paths and cooperating along said common length of travel to form a continuously moving train of centrally apertured gripping elements moving toward an extrusion die adjacent the end of said common length of travel. Rod of indefinite length, coated with shear transmitting medium and extending into the central apertures of the gripping elements, is drawn along the common length of travel by means of shear forces generated in said coating by said gripping elements and transmitted to said rod as viscous drag force along the surface of the rod. Axial and normal stresses are built up in the rod to stress the rod far above its yield strength and increase its ductility, or capacity for deformation without fracture. In this state, the rod is moved through and deformed by the die. A pressure cylinder surrounds the gripping elements along the common length of travel and provides balanced increasing lateral support to the gripping elements as they move toward the die.

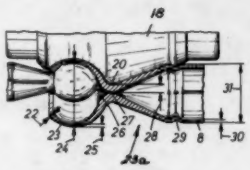
3,740,986

BALL JOINT, ESPECIALLY FOR STEERING DEVICES AND WHEEL SUSPENSIONS OF MOTOR VEHICLES

Leopold F. Schmid, Leharstrasse 8, 7000 Stuttgart, Germany

Division of Ser. No. 888, Jan. 16, 1970, Pat. No. 3,594,026.
This application Jan. 18, 1971, Ser. No. 107,263
Claims priority, application Germany, Jan. 8, 1969, P 19 00 642.9; Mar. 31, 1969, P 19 16 451.3; Apr. 2, 1969, P 19 16 832.2; Apr. 2, 1969, P 19 16 833.3
Int. Cl. B21h *1/14*
U.S. Cl. 72—84 **9 Claims**

For use in a ball joint, especially for connecting rods, steering devices and wheel suspensions of motor vehicles, a joint unit and method of making same, according to which a section of deformable tubular material has one end portion formed into a hollow ball head while by means of a constriction it is separated from a hollow shank portion forming an extension of said head and constriction and together with said head forming a single integral piece with different cross-sectional



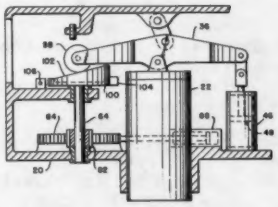
diameters, the thickness of cross-sectional areas of said ball head and said extension including said constriction increasing proportionally with the decrease in the outer diameter of said cross-sectional areas and vice versa.

3,740,987

GEAR ROLLING MACHINE

Benjamin F. Bregi, Grosse Pointe Shores; Carl H. Motz, Gaylord, and Arthur B. Bassoff, Oak Park, all of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 861,594, Sept. 29, 1969, Pat. No. 3,659,335. This application Oct. 7, 1971, Ser. No. 187,377
Int. Cl. B21h *5/02*
U.S. Cl. 72—94 **3 Claims**



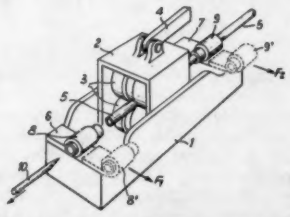
A machine which can be used selectively for crossed axes gear shaving employing a gear-like shaving cutter having cutting edges in the sides of its teeth, and as a gear rolling machine employing a die in the form of a hardened gear. Provision is made for relative traverse while shaving in a direction occupying a plane parallel to the axes of the gear and tool, and for incremental infeed during shaving and continuous infeed during gear rolling.

3,740,988

TUBE ROLLING MILL

Pierre Peytavin, Neuilly-sur-Seine, France, assignor to Societe Anonyme dite:-Valloure (Usines A. Tubes de Lorraine-Escaut et Vallourec Reunies), Paris, France

Filed Sept. 10, 1971, Ser. No. 179,497
Int. Cl. B21b *21/04*
U.S. Cl. 72—238 **7 Claims**



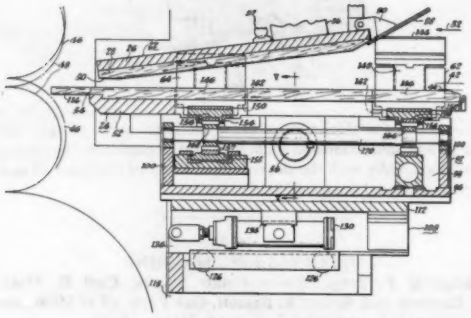
Intermittent tube rolling mill in which at least one of the vises for holding the work is mounted for sliding movement in a direction transverse to the path of travel of the work.

3,740,989

STRIP MILL ENTRY GUIDES

Andrew J. Petros, Oakdale, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Mar. 31, 1971, Ser. No. 129,897
Int. Cl. B21b 39/20
U.S. Cl. 72—250 16 Claims



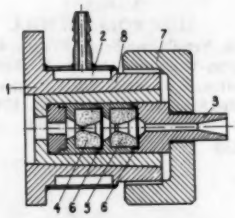
An entry guide mechanism comprises upper and lower platens positioned to receive an elongated workpiece therebetween. A pivotably mounted support is secured to the upper platen for pivotally supporting the upper platen, and a pivotally mounted support is secured to the lower platen for pivotally mounting the lower platen. An angularly displacing drive mechanism is secured to at least one of the pivoted supports to pivot portions of the platens toward one another to clamp the workpiece therebetween. The pivotal mountings for the platens conform the attitudes thereof with that of an adjacent segment of the workpiece.

3,740,990

DRAWING DIE ASSEMBLY WITH INTEGRAL COOLING SYSTEM IN DIE HOUSING

Tadeusz Prajsnar; Jozef Rulinski, both of Gliwice; Edward Zglobicki, Zabrze; Ryszard Lyzwinski, Sosnowiec; Ireneusz Lacheta, Katowice; Aleksander Szczepanik, Katowice; Stanislaw Piaskowski, Katowice, and Adam Godyn, Gliwice, all of Poland, assignors to Instytut Metalurgii Zelaza, Gliwice, Poland

Filed Feb. 16, 1971, Ser. No. 115,396
Int. Cl. B21d 37/16; B21c 3/00
U.S. Cl. 72—342 7 Claims



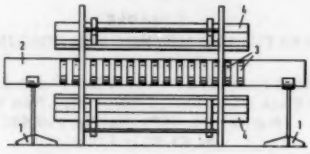
A pressure drawing die designed for drawing wires, rods and tubes made of materials having varied mechanical properties, whereby use is made of the effect of hydrodynamic friction. The drawing die incorporates a system of dies with a pressure sleeve with hydrodynamic action. A cooling system is built into the drawing-die body or housing. The inlet portion of the pressure sleeve extends outside the body through the orifice in a pressure nut. Between dies a seal in a form of labyrinths and metal powders is provided. The working dies are provided with metal jackets which separate the die core from the pressure mounting.

3,740,991

TUBE BENDING PROCESS

Laurentius Dominicus Johanna Margaretha Walraven, Buys Ballotstraat 11, and Hendericus Gerardus Hoogenboom, Oude Gracht 284, both of Utrecht, Netherlands

Filed Oct. 8, 1971, Ser. No. 187,646
Int. Cl. B21d 7/00
U.S. Cl. 72—342 6 Claims



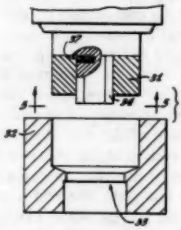
A method of forming a bend in a normally rigid tube of a material which becomes plastic at an elevated temperature, in which the material of the tube portion to be bent is rendered plastic by heating means, supporting means being provided to ensure that the tube remains substantially dimensionally stable in cross-section during the bending, the supporting means consisting of intermediate zones kept under substantially normal temperature conditions, which conditions are realized by screening said zones by means of aluminium strips from heat supplied by said heating means.

3,740,992

FORMING HOLLOW BLANKS

Wolfgang Kienzler, Nurnberg, and Marten Burgdorf, Schwaig, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Division of Ser. No. 67,088, Aug. 26, 1970. This application Mar. 20, 1972, Ser. No. 235,953
Claims priority, application Germany, Aug. 29, 1969, P 19 43 884.7
Int. Cl. B21j 13/00
U.S. Cl. 72—361 2 Claims



A hollow blank is slipped on a punch to be formed in cooperation with a die. Prior to engagement with the die, the blank is held and retained on the punch in a manner which does not disturb the forming process.

3,740,993

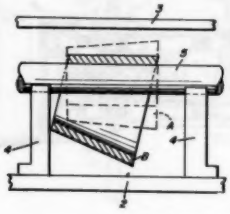
PROCESS FOR PRODUCING HOLLOW FORGING WITH FRUSTO-CONICAL EXTERIOR AND INTERIOR SURFACES

Charles H. Moore, Sr., 645 Matanzas Court, Fort Myers Beach, Fla.

Filed Nov. 12, 1971, Ser. No. 198,239
Int. Cl. B21k 21/10
U.S. Cl. 72—370 3 Claims

A hollow open-ended frusto-conical forging having substantially uniform wall-thickness from end-to-end, for use as a reducer in pipe lines and the like, is made by first obtaining a

hollow work-piece having a frusto-conical exterior surface and substantially cylindrical interior surface. This work-piece is heated to forging temperature and placed around a horizontally disposed cylindrical mandrel which is supported on the bed of a power press and the platen of the power press is pressed against the major portion of the work-piece which is internally supported by the mandrel to obtain a tapering reduction in the major portion of the work-piece thereat. The platen is then raised and the work-piece is partially rotated to position an immediately adjacent segment of the work-piece



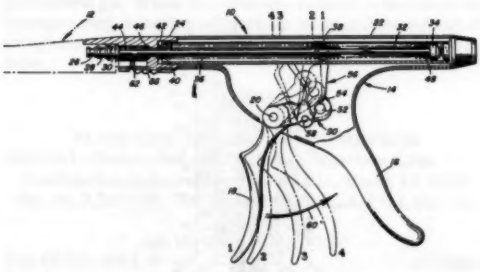
between the platen and mandrel. These steps are continued, with the intermediate raising of the platen and partial rotation of the work-piece until the inside and outside diameters of the work-piece are of acceptable dimensions throughout a 360° arc. The power press is then adjusted to increase the lowermost position of the platen with respect to the mandrel, and the steps described are repeated throughout a 360° arc as before. This is continued until the final hollow product with frusto-conical exterior and interior surfaces of the desired dimensions has been obtained.

3,740,994

THREE-STAGE MEDICAL INSTRUMENT

Alfred DeCarlo, Jr., Stamford, Conn., assignor to United States Surgical Corporation, Baltimore, Md.

Filed Oct. 13, 1970, Ser. No. 80,450
Int. Cl. B21d 7/06
U.S. Cl. 72—407 **14 Claims**



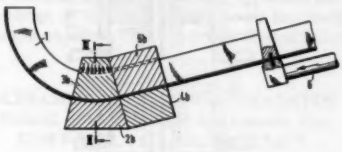
A cartridge and an instrument which, together serve to mechanically suture and divide organic tubular structures, such as blood vessels. The cartridge houses a plurality of staples and operates in three stages. After the tubular structure is inserted between the jaws of the cartridge, the cartridge jaws close, a pair of pushers come forward and suture the organic structure in two spaced locations with a pair of surgical staples, and a blade comes forward and divides the tubular structure at a position intermediate the two staples. The staples are indexed and readied for discharge by means of a pair of leaf springs which act between a fixed rail assembly and a movable wrap assembly. The instrument is adapted to coact with the novel cartridge and depends upon the interaction of three springs to bring about the three-stage operation of the cartridge.

3,740,995

METHOD FOR BENDING A GUTTER OR EQUIVALENT INTO A CURVE

Helge Adolf Fredriksson, Sorsakoski, Finland

Filed June 30, 1971, Ser. No. 158,507
Claims priority, application Finland, June 30, 1970, 1839/70
Int. Cl. B21d 7/03
U.S. Cl. 72—414 **2 Claims**



The bending of a gutter or equivalent article of sheet metal by bending a small portion at a time between cooperating die elements which when placed in operative relationship, provide a space substantially equal to the thickness of the sheet metal, with the longitudinal and transverse cross section of the article to be bent. The edge surfaces of the article are subjected to pressure exerted by the die elements while the unbent portion of the article immediately before the die elements is supported from inside and outside by retaining means corresponding to the unbent article.

ERRATUM

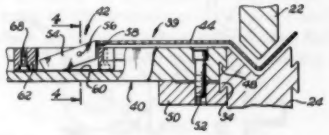
For Class 72—419 see:
Patent No. 3,741,029

3,740,996

PRESS BRAKE DIE STRUCTURE INCORPORATING GATE MEANS

Alfred G. O. Hix, 3032 Rancho La Carlota, Covina, Calif.

Filed Mar. 17, 1971, Ser. No. 125,159
Int. Cl. B21d 11/22
U.S. Cl. 72—461 **2 Claims**



Die structures for press brakes are disclosed, in which the actual dies are elongated structures having a substantially uniform cross section, and further include a support structure, to which a gage means is affixed for supporting stops or guides to establish the position of a workpiece with reference to the dies.

3,740,997

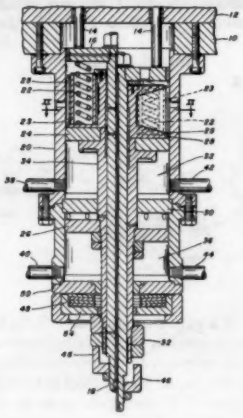
BLANKHOLDING ASSEMBLY

George H. Blake, and Ernest J. Clowes, both of Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 17, 1972, Ser. No. 218,431
Int. Cl. B21d 24/04
U.S. Cl. 72—465 **3 Claims**

A blankholding assembly is provided for a forming press including an air cushion for controlling the movement of die ele-

ments in the press during the working stroke, and further including springs on the blankholding assembly for progressively



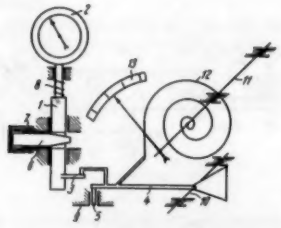
loading the air cushion to minimize the impact load and strain on the press.

3,740,998

METHOD FOR CALIBRATING INSTRUMENTS DESIGNED TO GAUGE THE THICKNESS OF NON-MAGNETIC COATINGS ON METAL PRODUCTS AND ATTACHMENT FOR THE REALIZATION OF THIS METHOD

Nikolai Sergeevich Akulov, Leninsky prospekt 70, Minsk, U.S.S.R.

Filed Nov. 17, 1970, Ser. No. 90,269
Int. Cl. G01b 7/06
U.S. Cl. 73—1 A 2 Claims



The present invention relates to a method for calibrating instruments designed to gauge the thickness of non-magnetic coatings on ferromagnetic products and an attachment to realize this method.

The method and the attachment according to the invention are characterized by the fact that a gauge is calibrated by forming air gaps between an electro-magnet of the gauge being calibrated and an uncoated area of the ferromagnetic product being gauged, imitating the thickness of non-magnetic coatings, readings of the gauge are noted for each setting of the air gap, and the readings are then plotted as a calibration chart of the thickness gauge for a given type of substrate.

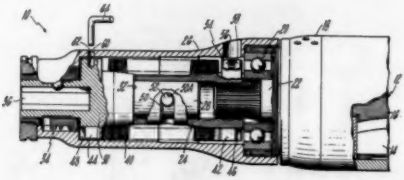
The method enables thickness gauges to be calibrated without the use of expensive standards.

3,740,999

POWER TOOL HAVING STALL TORQUE CALIBRATING UNIT

Hugh L. Whitehouse, Lyndhurst, Ohio, assignor to The Stanley Works, New Britain, Conn.

Filed Apr. 13, 1972, Ser. No. 243,706
Int. Cl. G01l 25/00
U.S. Cl. 73—1 C 12 Claims



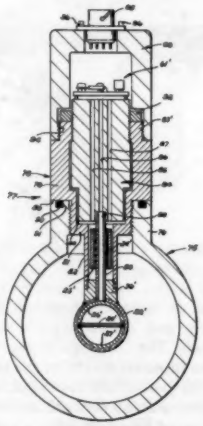
A rotary output locating and locking device operable for positively locking a rotary output of an air motor operated power tool in a predetermined angular relation to the tool housing and for positioning a torque indicator carried on a motor operated rotary drive, which is interconnected to the rotary output via a torsional spring drive, in a corresponding starting position to condition the tool to be energized for calibrating and setting stall torque under simulated running load conditions.

3,741,000

VIBRATION DENSITOMETER PROBE

Charles Evelengh Miller, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 8, 1971, Ser. No. 132,312
Int. Cl. G01n 9/00
U.S. Cl. 73—32 12 Claims



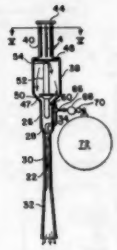
A probe for a vibration densitometer which avoids the use of a complicated and expensive resilient mount by employing a magnetostrictive hammer supported by a member having a mass substantially larger than that of the hammer. Resonant frequency—density analog error due to pipeline vibration is thus eliminated while at the same time the structure is simplified.

3,741,001

APPARATUS FOR SAMPLING PARTICULATES IN GASES

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect of an invention, and Rex C. Wood, 1958 Cedar Drive, New Brighton, Minn.

Filed Mar. 20, 1972, Ser. No. 235,957
Int. Cl. G01n 15/06
U.S. Cl. 73—28 15 Claims



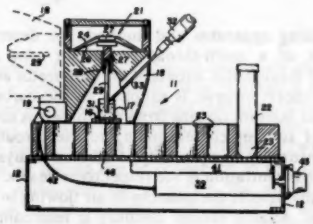
Improved apparatus for sampling particulatematerial in gases of the type comprising the combination of a slit impactor and air ejector pump. The apparatus disclosed comprises an air ejector pump, a primary nozzle in the air ejector pump, a source of compressed gas which compressed gas is supplied to the primary nozzle through a valved supply line, a collection cylinder having a plurality of slit impactors at the cylindrical surface thereof. The slit impactors are parallel to the longitudinal axis of the collection cylinder. The collection cylinder is normally stowed within a cylindrical storage casing, one end of which is in communication with the inlet of the air ejector pump. The second end of the casing has a circular opening with a diameter larger than the diameter of the collection cylinder. The apparatus has a pneumatic actuator which is operated by compressed gas fed to the actuator from the same valved supply line which supplies the ejector pump. The actuator is connected to the collection cylinder in such a manner that when the compressed gas is fed to the actuator the collection cylinder will be moved outside of the storage casing. The actuator has a spring to bias the collection cylinder to the stowed position when the actuator is not being supplied with pressurized gas. When the collection cylinder is stowed in the storage casing, sampling surfaces are isolated from outside atmosphere to prevent contamination of the sampled particulates.

3,741,002

FLUID TEST APPARATUS AND METHOD

Sanford L. Simons, Box 108 Star Route, Morrison, Colo.

Continuation-in-part of Ser. No. 807,011, March 13, 1969, Pat. No. 3,587,295. This application June 28, 1971, Ser. No. 157,568
Int. Cl. G01n 11/16, 33/16
U.S. Cl. 73—64.1 14 Claims



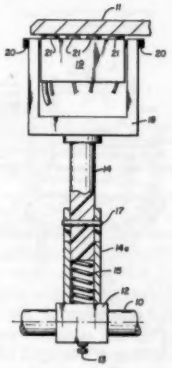
Apparatus and method for determining the coagulation characteristics of fluids in which a sample of a biological or other fluid is subjected to mechanical agitation while a reading is taken by energy sensitive means to determine the instantaneous and/or sequential energy transmitted or absorbed by the fluid. A readout indicative of developing coagulation, shear modulus and/or rheology is obtained that may be coordinated with expired time. In a preferred embodiment a power source having an exciter rod exposed to the fluid sample is provided as a vibrational energy input source. The readout is coupled to the power source-exciter combination to provide an indication of the changes in energy transmitted or absorbed by the fluid sample. Meters or recorder apparatus are used to provide readings of changing energy levels for coordination with the sample exposure time to provide desired information.

3,741,003

ULTRASONIC INSPECTION APPARATUS

Walter A. Gunkel, 6515 Moss Oak, San Antonio, Tex.

Filed Feb. 22, 1971, Ser. No. 117,677
Int. Cl. G01n 29/04
U.S. Cl. 73—67.7 15 Claims



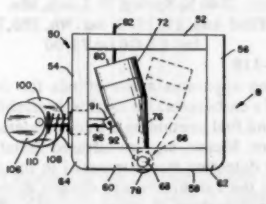
Ultrasonic inspection apparatus is disclosed in which a plurality of transducers may be employed in a transducer housing assembly to permit simultaneous inspection of a plurality of adjacent sections of the object being inspected, for example, adjacent contiguous circumferential bands of a tubular member. The transducers are preferably mounted in the housing assembly in a manner which permits limited canting of each of the transducers. Also, a transducer is disclosed which includes an acoustical coupling fluid injection means which assures good acoustical coupling and can provide a fluid bearing system for the transducer.

3,741,004

ULTRASONIC CONTACT SCANNER

Gerald J. Posakony, Boulder, Colo., assignor to Automation Industries, Inc., Century City, Calif.

Filed Feb. 16, 1971, Ser. No. 115,582
Int. Cl. G01n 29/04
U.S. Cl. 73—67.8 S 10 Claims



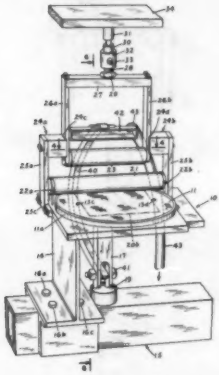
A contact scanner is described which is useful in an ultrasonic medical diagnostic system. The scanner includes a

pivotally mounted search unit which includes a transducer mounted in a conical cylinder which is disposed to scan back and forth near the apex of the conical cylinder. The transducer is positioned at a spaced distance from the pivot point whereby the transducer is pivoted at the pivot point to provide a broad angle sweep of ultrasonic energy transmitted from the transducer through the cylinder.

3,741,005
WET WEB TENSILE TESTER

Marcel J. Dauth, Hawkesbury, Ontario, and Uldis V. Valters, Brownsburg, Quebec, both of Canada, assignors to Canadian International Paper Company, Montreal, Quebec, Canada

Filed Sept. 28, 1971, Ser. No. 184,494
Int. Cl. G01n *3/08*
U.S. Cl. 73—95 **6 Claims**



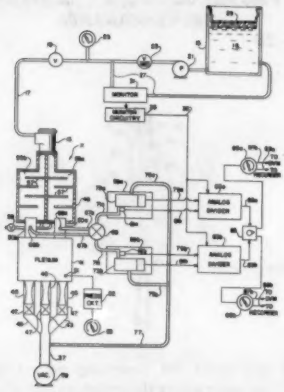
Apparatus for testing weak webs, such as wet webs of paper pulp, for tensile strength and elongation is provided having a relatively flat member for placement of a web specimen, two clamping members superimposed one above the other over the relatively flat member, the lower clamping member clamping one end of the specimen to the flat member and the other clamping member providing means to hold the other end of the specimen, a lifting arm means capable of lifting said other end of the specimen into position to be clamped over the upper clamping member. Means are provided to apply tension on the clamped specimen through the two clamping members and measure the tensile strength of the specimen web.

3,741,006
CARBURETOR FLOW STAND

Jean Bordeaux, 2840 N. Spring, St. Louis, Mo.

Filed Aug. 15, 1972, Ser. No. 280,788
Int. Cl. G01m *19/00*
U.S. Cl. 73—118 **30 Claims**

Flow-testing apparatus and methods for determining air-fuel ratios of a carburetor. An air flow is established through a carburetor and fuel containing a tracer material is supplied to the carburetor. Means, e.g., an infrared radiation analyzer, is provided for detecting tracer material in the air-fuel mixture flowing from the carburetor and oxygen detector means detects the concentration of oxygen. Analog divider circuitry serves as means for deriving from the detected tracer and oxygen concentrations the air-fuel ratio produced by the carburetor. Arrangements are disclosed for improving the response of the radiation analyzer by providing increased rate of flow of

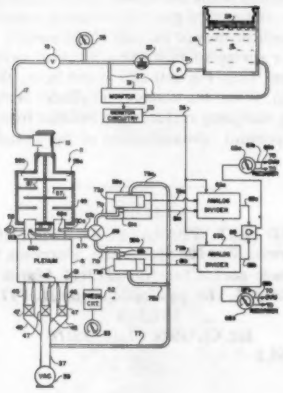


sampled gas through the analyzer and also for cancelling infrared radiation absorption interference caused by vaporized fuel in the analyzer.

3,741,007
CARBURETOR FLOW STAND

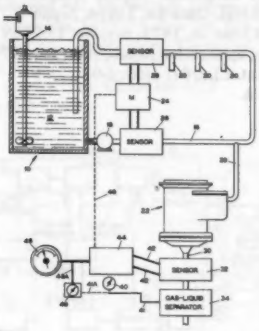
Jean Bordeaux, 2840 N. Spring, St. Louis, Mo.

Filed Aug. 15, 1972, Ser. No. 280,783
Int. Cl. G01m *19/00*
U.S. Cl. 73—118 **30 Claims**



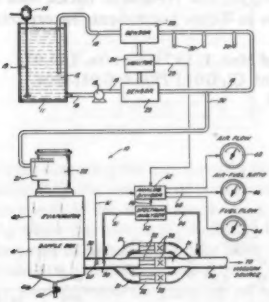
Flow-testing apparatus and methods for determining air-fuel ratios of a multi-throat carburetor. An air flow is established through the throats of the carburetor and fuel containing a tracer material is supplied to the carburetor. The resultant air mixture flowing from the throats is divided into a plurality of streams corresponding to the throats. Detector means, constituted by a plurality of infrared analyzers, detects the tracer concentration in the respective streams. Further detector means detects the quantity of air flowing in the respective stream. Analog divider circuitry is interconnected with the tracer and air detectors and derives from the detected tracer concentration and air quantity air-fuel ratios of the stream mixtures.

3,741,008
CARBURETOR FLOW STAND
Edward H. Casey, Creve Coeur, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed July 1, 1971, Ser. No. 158,801
Int. Cl. G01m *15/00*
U.S. Cl. 73—118 **20 Claims**



A carburetor flow stand in which air is drawn through the carburetor by a vacuum pump. This causes fuel to flow and measurement of the fuel as well as measurement of the air/fuel ratio is accomplished by sensing and measuring at a point below the throttle valve, the respective quantities of air and fuel passing through the carburetor. In one embodiment the property of the fuel which is measured is a tracer contained in the fuel. In another embodiment the property measured is the absolute density of the vaporized air/fuel mixture.

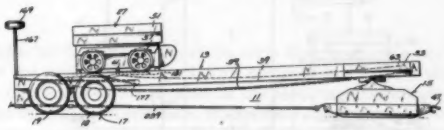
3,741,009
CARBURETOR FLOW STAND
Jean Bordeaux, Fullerton, Calif., assignor to ACF Industries, New York, N.Y.
Filed July 1, 1971, Ser. No. 158,796
Int. Cl. G01m *19/00*
U.S. Cl. 73—118 **33 Claims**



In a carburetor flow stand wherein means are provided for establishing a predetermined air flow through a carburetor under test and for generating a signal indicative of the air flow, wherein a fuel line is provided for conducting a fuel to the carburetor, the carburetor operating to mix the fuel with the air, and wherein an output line is connected to the downstream end of the carburetor for receiving the air-fuel mixture therefrom, an improved method and means for determining the fuel flow rate through or the air-fuel mixture ratio produced by the carburetor comprising adding a tracer material to the fuel, the tracer material having a high absorption characteristic at a predetermined location in the electromagnetic spectrum, vaporizing the tracer material, separating the mixture of air and vaporized tracer material from the fuel, and detecting with a spectrum analyzer which is sensitive to said predetermined location in the electromagnetic spectrum the quantity of tracer material in the output line. According to a preferred embodiment of the invention, the tracer material has a high absorption characteristic in the infrared spectrum and the spectrum analyzer is an infrared spectrophotometer.

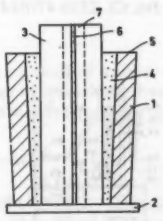
According to another embodiment of the invention, the fuel itself is entirely vaporized, the fuel being selected to have a high absorption characteristic at a known location in the electromagnetic spectrum, and the spectrum analyzer determines directly the quantity of fuel in the output line.

3,741,010
TRACTOR PULLING DEVICE
Lloyd A. Luedtke, P.O. Box 123, Allenton, Wis.
Filed Apr. 22, 9171, Ser. No. 136,407
Int. Cl. G01l *5/13*
U.S. Cl. 73—141 R **12 Claims**



Disclosed herein is a device which is adapted to be pulled by a tractor and which includes a frame supported, at the forward end, by a sled and, at the rearward end, by a set of ground engaging wheels, together with a cart movable along a track on the frame between the forward and rearward ends of the frame. Also disclosed herein is a drive means which is connectable between the cart and a ground engaging wheel for moving the cart along the track in response to travel of the wheel over the ground. In addition, the device disclosed herein includes provision for over-the-road transport and for automatically initiating driving movement of the cart from the rearward end to the forward end in response to the initial movement of the device at the beginning of a tractor pull.

3,741,011
METHOD AND APPARATUS FOR MEASURING THE INTERNAL VOLUME OF MOULDS AND SIMILAR CAVITY MEMBERS
Rolf Seybold, Solingen, Germany, assignor to Egon Evertz, Solingen, Germany
Filed May 28, 1971, Ser. No. 147,733
Int. Cl. G01f *17/00*
U.S. Cl. 73—149 **13 Claims**



A method for measuring the internal volume of moulds or similar cavity members in which there is provided a filling member of known external volume which is arranged so as to substantially fill the volume of the mould or cavity member, and a filling member is introduced into the mould or cavity

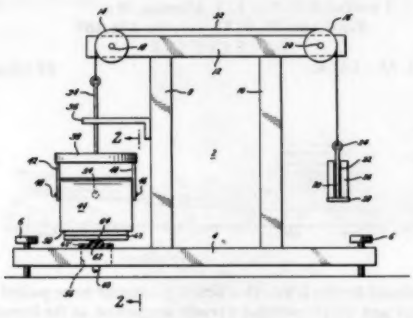
member so that a gap remains between the filling member and the internal wall and the gap being filled to a definable height with a flowable granular material of known bulk weight. The granular material disposed within the mould or cavity member is thereafter discharged and its weighable value measured so that the internal volume of the mould or similar cavity member can be determined.

3,741,012

METHOD FOR DETERMINING TACK

Donald T. Day, Matawan, N.J., assignor to Ashland Oil Inc., Houston, Tex.

Filed Apr. 30, 1971, Ser. No. 139,161
Int. Cl. G01n *19/04*
U.S. Cl. 73—150 A **4 Claims**



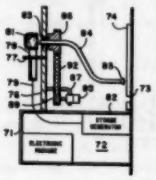
In a method and apparatus for testing and determining the tack properties of rubbery or polymeric compositions test specimens of polymer stock are each supported on a perforated plate or grid so that the specimen completely covers the perforated area. A differential air pressure is applied across the specimen plate contact area thereby forcing the specimen against the plate and maintaining the former in position. Two test specimens of polymer stock, each thus mounted, are then pressed together under a constant static force for a predetermined time interval. Immediately thereafter a second constant static force in a counter direction is released which tends to separate the specimens. The time required for separation is measured and is an indication of the tack of the specimens.

3,741,013

SIGNAL RESPONSIVE DISPLAY APPARATUS

Donald R. Hering, and James M. Lindsey, both of Houston, Tex., assignors to Sperry-Sun Well Surveying Company, Sugar Land, Tex.

Filed Nov. 4, 1970, Ser. No. 86,879
Int. Cl. E21b *47/024*
U.S. Cl. 73—151 **14 Claims**



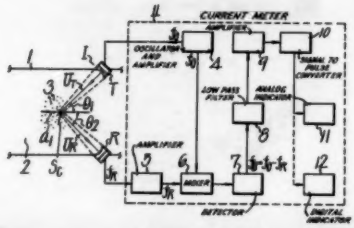
A light transmitting rod for carrying a flash of light from a flash source to a point adjacent a translucent scale onto which the flash is projected. The rod is rotated relative to the scale. One or more flashes may be generated during one revolution of the rod relative to the scale with such flashes representing the time relation between electrical signals which in turn may represent the boundaries or limits of a measured parameter.

3,741,014

ULTRASONIC CURRENT METER

Kohzoh Tamura, Chigasaki, Japan, assignor to Kabushiki Kaisha Tokyo Keiki, Ohta-ku, Tokyo, Japan

Filed June 16, 1971, Ser. No. 153,559
Claims priority, application Japan, June 25, 1970, 45/55416
Int. Cl. G01f *1/00*; G01p *5/00*
U.S. Cl. 73—194 A **2 Claims**



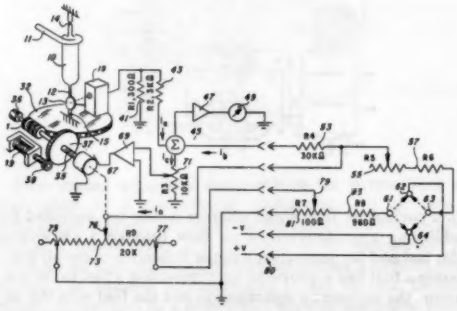
An ultrasonic current meter having an ultrasonic transmitter, an ultrasonic receiver, an oscillator for supplying a signal of a predetermined frequency to the ultrasonic transmitter to emit ultrasonic waves therefrom, a circuit for generating a signal of a Doppler frequency by combining a signal corresponding to the ultrasonic waves reflected by objects contained in a fluid to be measured but different in acoustic impedance from the fluid with a signal derived from the oscillator and an indicator device for indicating the flow rate of the fluid in accordance with the signal of the Doppler frequency, in which the ultrasonic transmitter and receiver have devices for controlling the ultrasonic waves transmitted and received mounted adjacent the transmitter and receiver, respectively, thereby to ensure accurate measurement of the flow rate of the fluid.

3,741,015

PRECISION PRESSURE GAUGE

Kennard S. Moss, Jr., and Weldon R. Hicks, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 1, 1971, Ser. No. 119,972
Int. Cl. G011 *19/04*; G011 *7/04*
U.S. Cl. 73—393 **1 Claim**



A precision pressure gauge including Bourdon tube has a direct linear relation between applied pressure and Bourdon tube angle of deflection. An electrical circuit applies a continuously adjusted offset current to a transducer in order to apply the appropriate correction at any point on the Bourdon tube error curve.

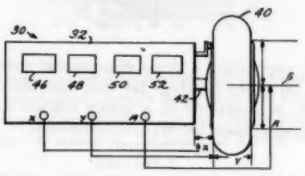
ERRATUM

For Class 73—425 see:
Patent No. 3,741,732

3,741,016
MACHINE FOR BALANCING MOTOR VEHICLE WHEELS

Dionys Hofmann, Darmstadt-Marienhohe, Germany, assignor to Gebr Hofmann KG, Darmstadt, Germany

Filed Jan. 14, 1971, Ser. No. 106,394
Claims priority, application Germany, Jan. 1, 1970, P 20 01 972.1
Int. Cl. G01m *1/22*
U.S. Cl. 73—462 **7 Claims**

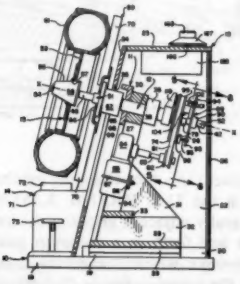


A machine for balancing motor vehicle wheels including sensors for sensing the physical dimensions of the wheel to be balanced. The sensors comprise movable arms positioned along potentiometers as a function of rim diameter and depth.

3,741,017
UNBALANCE DETECTOR

Alfred A. Reiser, 6976 Old Lake Shore Road, Lakeview, N.Y.

Filed Sept. 23, 1971, Ser. No. 183,143
Int. Cl. G01m *1/12, 1/16*
U.S. Cl. 73—480 **13 Claims**



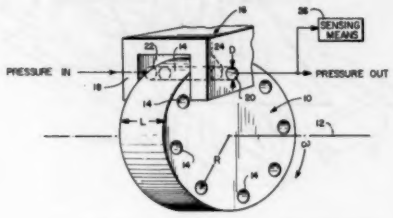
Apparatus for detecting the location of a point of unbalance and also preferably the amount of unbalance in a rotatable body such as a vehicle tire-wheel assembly, comprising means for detecting when the torque produced by the gravitational effect of the point of unbalance in the body when supported for rotation about a non-vertical axis produces it maximum effect thereby to determine the location of said point of unbalance and also preferably means for measuring the value of such maximum torque thereby to determine the amount of unbalance.

3,741,018
FLUIDIC ANGULAR RATE SENSOR

Silas Katz, Silver Spring, and Edgar G. Hastie, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Nov. 23, 1971, Ser. No. 201,282
Int. Cl. G01p *3/26*
U.S. Cl. 73—506 **5 Claims**

A fluidic angular rate sensor is disclosed comprising a rotatable disc which preferably has a plurality of elongated apertures therethrough of a finite length, the rotatable disc being adapted to be rotated about its axis at a velocity which is proportional to an angular velocity to be measured. A fluid input means or hole having a given discharge area is associated with the rotating disc and serves to sequentially apply a fluid signal into each aperture whereat the signal is entrained while the disc rotates. A fluid collector means having a given collector area is disposed in substantial alignment with the fluid input means and is associated with the rotating disc, the

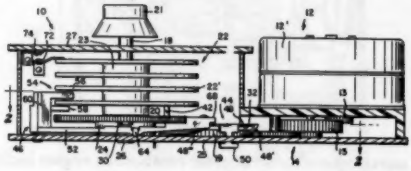


collector sequentially receiving from each aperture a portion of the applied fluid signal. This portion has a value which is proportional to the product of the instantaneous velocity of the fluid signal entrained in the aperture and the instantaneous exposed collector area of the collector means, which collector area varies as the disc rotates. Sensing means are provided to operate upon the received signal so as to derive an output signal which preferably comprises the average of the received signal, the output signal being indicative of the angular velocity of the disc.

3,741,019
SHAFT LOCKING DEVICE FOR A TIMER

Richard H. Weber, Indianapolis, and Benjamin F. Chestnut, Greenwood, both of Ind., assignors to P. R. Mallory & Co., Indianapolis, Ind.

Filed Sept. 13, 1971, Ser. No. 179,652
Int. Cl. F16h *5/74*
U.S. Cl. 74—3.5 **5 Claims**



When a cam carrying shaft of a timer is axially indexed, a lever is actuated to move a retaining means into engagement with a one-way clutch means to prevent manual rotation of the cam carrying shaft.

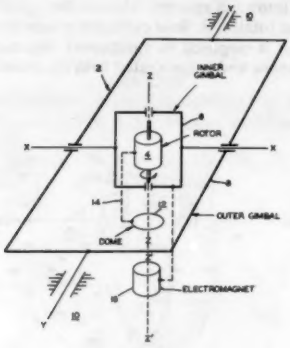
3,741,020
ELECTROMAGNETIC GYRO TORQUER

Charles E. Hurlburt, River Edge, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Aug. 18, 1971, Ser. No. 172,692
Int. Cl. G01c *19/30*
U.S. Cl. 74—5.46 **5 Claims**

An electromagnet is arranged with a gyro so that eddy currents generated by movement of a conductor in the field of the

magnet provide a precessionaly torque, a component of which decelerates or opposes gyro rotation when the spin axis of the



gyro is not coincident with the magnet axis. When said axes are coincident, no further precessional and decelerating torques are provided.

3,741,021

STARTER MOTORS

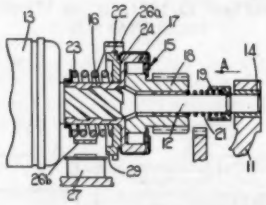
Nicholas Tyers Parsons, Exmouth, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 14, 1972, Ser. No. 234,613

Claims priority, application Great Britain, Apr. 3, 1971, 8,628/71

Int. Cl. F02n *11/00*

U.S. Cl. 74—7 R **5 Claims**



A starter motor for an internal combustion engine including a casing having journalled for rotation therein a rotor shaft. The rotor shaft carries an armature assembly and a pinion assembly is mounted on the rotor shaft by way of a helical screw thread for limited rotational and axial movement relative to the shaft. The pinion assembly can move relative to the shaft between an operative position and a retracted position, and frictionally engaged with the pinion assembly is a member which is engageable by a detent device. The detent device when engaged with the member, resists rotation of the member which in turn resists rotation of the pinion assembly. Thus when the rotor shaft rotates and the detent is operative then the pinion assembly is driven towards its operative position by the action of the helical screw thread. In the operative position of the pinion assembly the detent member engages behind the pinion assembly so as to resist movement of the pinion assembly towards its retracted position. The detent device is returned to a position clear of the pinion assembly when the starter motor is de-energized.

3,741,022

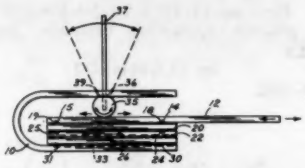
PROBING DEVICE FOR MICROCIRCUITS

Jack Edward Olson, 1633 South Yukon St., Lakewood, and Guy G. Catalano, 3910 South Kalamath, Englewood, both of Colo.

Filed Nov. 23, 1970, Ser. No. 91,652

Int. Cl. F16h *21/44*

U.S. Cl. 74—102 **14 Claims**



A table supporting a three dimensional movement probe mounted on roller bearings for two dimensional horizontal movement, is contained in a spring loaded C-clamp frame which includes means for vertical movement.

3,741,023

TOOL CHANGING MECHANISM FOR A MACHINE TOOL

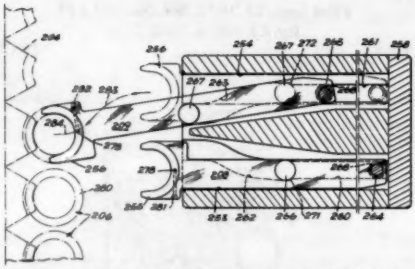
Hellmut Goebel, Reutlingen, and Ernst Raiser, Rommelsbach, both of Germany, assignors to BW-Weber Verwaltungsgesellschaft m.b.H., Reutlingen, Germany

Filed May 24, 1971, Ser. No. 146,130

Claims priority, application Germany, June 6, 1970, P 20 27 876.6

Int. Cl. F16h *21/44*

U.S. Cl. 74—110 **6 Claims**



An improvement in a tool changing mechanism of the type as disclosed in the U.S. Pat. No. 3,551,984 according to which two laterally adjacent gripping devices are alternately movable back and forth in a common guide element along separate guideways which are partly curved toward each other so that the gripping heads of both devices are alternately movable to the same point to pick up or deliver different tools at identical positions and the paths of the last part of the forward movements of both gripping devices extend nearly parallel and closely adjacent to each other and even the rear straight parts of the guideways may be spaced at a relatively small distance from each other, thus permitting the common guide element to be made of a narrow width.

3,741,024

ELECTRIC MOTOR AND REDUCTION GEARING UNIT

Pierre Bouthors, and Andre Lefeuvre, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt, (Haute de Seine) and Automobiles Peugeot, Paris, both of France

Filed Nov. 1, 1971, Ser. No. 194,731

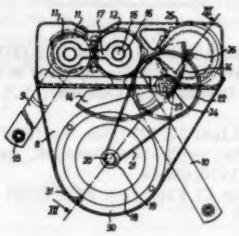
Claims priority, application France, Nov. 5, 1970, 7039802

Int. Cl. F16h *9/04*; E05f *15/16, 15/08*

U.S. Cl. 74—220 **6 Claims**

This unit comprises an electric motor having a flat case suspended through elastic means from a plate and rigid with

an annular collar embedded in a corresponding annular bead of flexible material capable of absorbing vibration and fastened to said plate, a gear reduction mechanism driving the control mechanism and a flexible transmission between the motor and the reduction gearing, said transmission operating



in conjunction with said bead for eliminating any rigid connection likely to propagate or amplify noise from said motor. This unit is intended more particularly for the remote control of a movable member of a vehicle, for example a window regulator.

3,741,025

PULLEYS

Michael Frederick Russell, Uxbridge, England, assignor to C.A.V. Limited, Birmingham, England

Filed Dec. 1, 1970, Ser. No. 94,029

Claims priority, application Great Britain, Dec. 2, 1969, 58722

Int. Cl. F16h *7/22*

U.S. Cl. 74—230.4 **4 Claims**

A pulley comprising a rim portion and a hub portion the two portions being connected together by means which permits relative axial movement between the portions. The means may comprise flexible spokes each spoke being formed in two parts disposed in side by side relationship and having a layer of damping material interposed therebetween.

3,741,026

BELT DRIVE APPARATUS HAVING IMPROVED TAKE-UP

Gustav Franzen, Neersen, Germany, assignor to Palitex Project Company GmbH, Krefeld, Germany

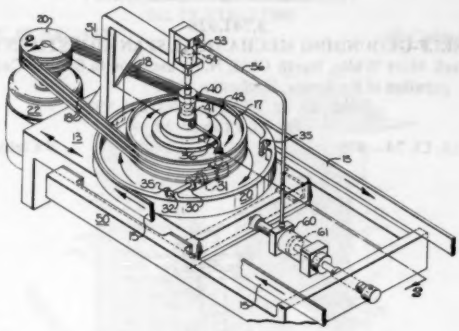
Filed May 1, 1972, Ser. No. 248,952

Claims priority, application Germany, May 3, 1971, P 21 21 685.3

Int. Cl. F16h *7/08*

U.S. Cl. 74—242.9 **6 Claims**

A belt drive apparatus having a take-up for varying the tension in the belt including a driven rotatable member, belt engaging means which includes a pulley for receiving and driving a belt and which is driven through a first cylinder-piston which is in fluid communication with a second cylinder-piston operatively connected with displaceable belt engaging means for displacing the belt in conformity with the relative movement of the members of the first cylinder-piston relative to each other to vary the tension on the endless belt in accordance



with the amount of torque on the belt driving pulley. The second cylinder-piston is secured coaxially to the driven rotatable member for rotation therewith and with the first cylinder-piston to eliminate problems in fluid communication between the first and second cylinder-piston devices.

3,741,027

DRIVING TRANSMISSION FOR OPENING AND CLOSING SLIDING ROOF PARTS

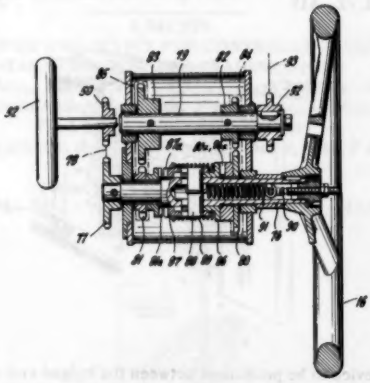
Feliz Schneider; Manfred Oerter, both of Netphen Eckmannshausen, Germany, and Rudolf Walser, Jegenstorf, Switzerland, assignors to Rheinstahl Ag, Netphen-Dries-Tiefenbach, Germany

Filed Nov. 5, 1970, Ser. No. 87,154

Claims priority, application Germany, Nov. 7, 1969, P 19 56 136.5

Int. Cl. F16h *5/52*

U.S. Cl. 74—337 **8 Claims**



A transmission or device for opening and closing sliding roof parts, particularly sliding roofs of freight cars, comprises a cable drum mounted for rotation about a horizontal axis and arranged for each sliding roof part on a cross connection transverse to the longitudinal direction of the freight car. A cable is secured to each roof part and the free ends of each cable are secured on the cable drum and are mounted such that one cable is wound when the other is unwound. The cables could also be connected together and the connected

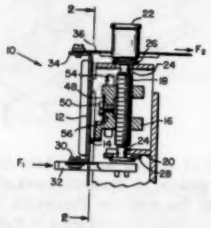
cable arranged to surround the cable drum at least once. A hand crank is connected to each cable drum through transmission means which includes an engaging and a disengaging clutch and having at least a two ratio gearing which automatically adjusts itself to the force expended on the crank.

3,741,028

SELF-GROUNDING MECHANICAL SPAN ADJUSTMENT

Jack Mort White, North Chili, N.Y., assignor to Sybron Corporation of Rochester, Rochester, N.Y.

Filed Jan. 31, 1972, Ser. No. 221,992
Int. Cl. F16h *55/18*
U.S. Cl. 74—409 **9 Claims**



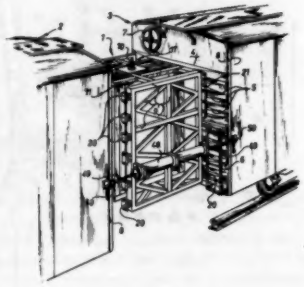
Disclosed is a mechanical span adjustment for a force balance variable condition transmitter, having an improved mechanical ground provided by a flat spring member which urges the fulcrum of the adjustable span against the body of the instrument, the spring being deformed beyond its yield point, so that it urges the fulcrum against the body of the instrument with a relatively constant force.

3,741,029

DEVICE FOR STRAIGHTENING BULGED ENDS OF RAILROAD CARS

Gregoire Bellemare, 397 Guilbeault St., Longueuil, Quebec, Canada

Filed Apr. 22, 1971, Ser. No. 136,439
Int. Cl. B21d *1/14*
U.S. Cl. 72—419 **7 Claims**



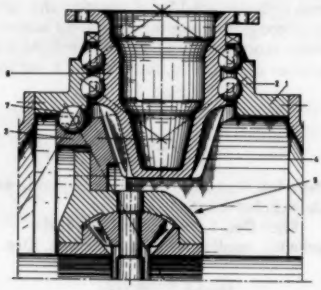
A device to be positioned between the bulged end of a railroad car and an abutment structure or between facing ends of two uncoupled railroad cars to straighten the bulged ends thereof. Bumper members are supported by a frame and extend horizontally from opposite sides thereof to push the bulged ends inwardly, two counter-rotating winch drums and cables provide pulling of the two railroad cars toward each other to produce straighthening by the bumper members. A differential gear drive assembly couples together the two counterrotating winch drums to continue the pull of one in response to a greater resistance against the other. A hydraulic adjustment system supports the bumper members and is arranged to adjust the height and horizontal projections thereof independently of each other. Hydraulic rams are fixed to the frame to push the railroad cars away upon completion of a straightening operation and hydraulic pistons are adapted to maintain constant tension on the lateral corner edges of the cars to prevent deformation thereof.

3,741,030

DRIVING GEAR ASSEMBLY FOR A MOTOR VEHICLE

Sture Asberg, Savedalen, Sweden, assignor to SKF Industrial Trading and Development Company, N.V., Amsterdam, Netherlands

Filed June 30, 1971, Ser. No. 158,500
Claims priority, application Denmark, June 30, 1970, 09652; June 30, 1970, 09654
Int. Cl. F16h *1/18;* **F16c** *33/00*
U.S. Cl. 74—424 **5 Claims**



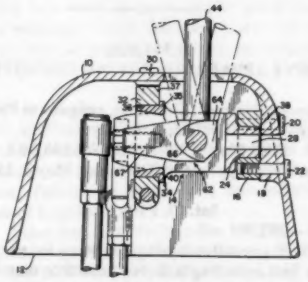
Driving gear assembly for a motor vehicle of the type having a crown wheel, a pinion wheel engaging the crown wheel and a differential mechanism secured to the crown wheel, said crown wheel having an axial bearing adjacent its periphery and adjacent at least one of the bearings of the pinion, characterized in that the pinion has a design with axial length and diameter such that the cross point of the load line of the mating crown wheel and pinion upon the axis of the pinion shaft coincides or almost coincides with the point of intersection of the load lines of said adjacent pinion shaft bearing, both crown wheel and pinion being located in the housing in proper position with respect to said housing and to each other without the use of adjusting means.

3,741,031

SINGLE LEVER CONTROL

Wilbur E. Schwerdtfeger, Western Springs, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Nov. 24, 1971, Ser. No. 201,869
Int. Cl. G05g *9/04*
U.S. Cl. 74—471 XY **2 Claims**



A two-cycle control lever with a first bell-crank lever pivotally carried on a second bellcrank lever which is, in turn,

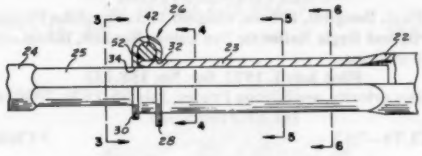
pivotally mounted in a frame. A single control handle serves as a common input means for both levers, and since the axes of the levers are perpendicular, upon actuation the bellcrank levers simultaneously function as both a bearing and a lever.

3,741,032

COLLAPSIBLE STEERING COLUMN ASSEMBLY

Donald J. Baker, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Sept. 27, 1971, Ser. No. 184,149
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **12 Claims**



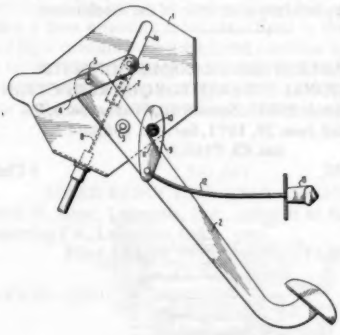
A collapsible steering column of the type used on motor vehicles is arranged to telescope upon impact. The steering column is provided with inner and outer telescoping polygonally shaped shafts axially slidable one within the other. The inner and outer shafts are held in rotational and axial driving engagement by clamping means which preloads the respective shafts to withstand normal axial impact but which permits the shafts to collapse axially when the force of impact of a collision exceeds a predetermined safe value.

3,741,033

VEHICLE EMERGENCY BRAKE ACTUATING MECHANISM

David J. Wilke, Williamsport, Pa., and James R. Kraus, Hagerstown, Md., assignors to Pennsylvania Wire Rope Corporation, Williamsport, Pa.

Filed Dec. 29, 1971, Ser. No. 213,494
Int. Cl. G05g *1/14*
U.S. Cl. 74—512 **10 Claims**



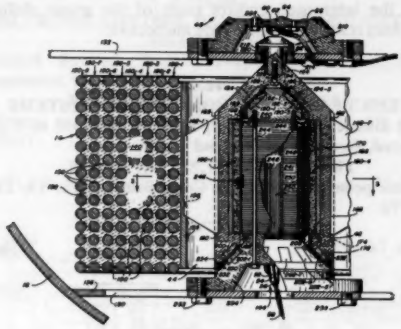
A vehicle emergency brake actuating mechanism wherein an over-center toggle linkage is operatively connected between the foot pedal lever and the brake actuating cable, whereby pressure can be applied to the emergency brake pedal to selectively brake the vehicle in a manner similar to the conventional hydraulic brake system, or to fully actuate the emergency brake by forcing the toggle linkage to the over-center locked position. A brake release lever is provided for moving the toggle linkage to the release position, and a resilient connection is provided between the toggle linkage and the end of the brake actuating cable to insure a constant tension on the emergency brake system.

3,741,034

INERTIAL ENERGY STORAGE APPARATUS

Stephen F. Post, Walnut Creek, Calif., assignor to Darrell E. Williams and Kenneth Fowler, both of Walnut Creek, Calif., part interest to each

Filed Sept. 2, 1970, Ser. No. 68,959
Int. Cl. F16c *15/00*
U.S. Cl. 74—572 **40 Claims**



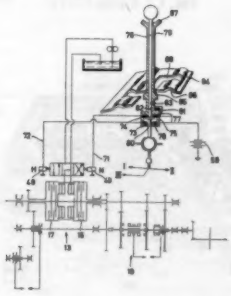
Inertial energy storage apparatus having two contrarotating rotors the fellies of which include a number of thin rings of high tensile strength material, such as glasses or embedded fiber composites, arranged in concentric shells, the ratio of the Young's Modulus to the density of the material of each ring being proportional to the n^{th} power of its mean radius, where n is not equal to zero, so that the radial separations between successive shells of rings produced by centrifugal force are reduced as compared with those produced when n is zero (e.g., all rings of the same material). The rotors have alternator-motors in their hubs, by means of which they can be brought to speed, and by means of which the inertial energy stored in them can be extracted in the form of variable-frequency alternating output voltage. This output voltage may be converted by a solid-state cycloconverter to alternating current of selectively variable frequency by means of which to power, for instance, the three-phase, squirrel-cage wheel motors of a non-pollution-producing vehicle.

3,741,035

METHOD OF AND DEVICE FOR CONTROLLING MULTI-STAGE CHANGE GEAR TRANSMISSIONS

Oswald May, Bonn, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed Oct. 8, 1970, Ser. No. 79,011
Claims priority, application Germany, Oct. 9, 1969, P 19 50 914.9
Int. Cl. F16h *3/08*; F16d *67/00*
U.S. Cl. 74—745 **4 Claims**



An arrangement for controlling a multi-stage change gear transmission with a main control group and a control group

shiftable under load and either preceding or following the main control group, in which the group shiftable under load has at least two forward stages the step of progression of which is considerably less than, for instance half, the step of progression of the main control group and in which during the shifting operation from one control stage to an adjacent control stage of the main control group first the step of progression of the main control group is subdivided and during the subsequent engagement of the next control stage of the main control group the interposed control stage of the group shiftable under load is automatically made ineffective.

3,741,036

VEHICLE TRANSMISSION CONTROL SYSTEMS

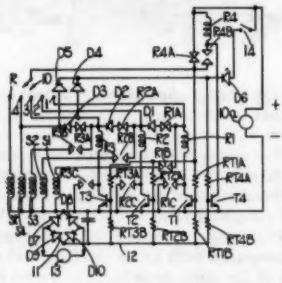
Robert Hulme Brown, Surrey, England, assignor to C.A.V. Limited, Birmingham, England

Filed Jan. 27, 1971, Ser. No. 110,238

Claims priority, application Great Britain, Feb. 10, 1970, 6,244/70

Int. Cl. F16h *3/74*; B60k *21/00*

U.S. Cl. 74—752 D **7 Claims**



A vehicle transmission control system including a plurality of solenoids each of which when energized causes engagement of a particular forward gear ratio of a vehicle gear box, a manually operable selector switch whereby a particular solenoid can be energized and a plurality of switches in series with one or more of the solenoids respectively. Means in the form of transistor and a generator is provided to control the operation of the switches respectively whereby energization of each solenoid can only occur if the road speed of the vehicle is below a predetermined value.

3,741,037

HYDRAULICALLY CONTROLLED PLANETARY GEAR

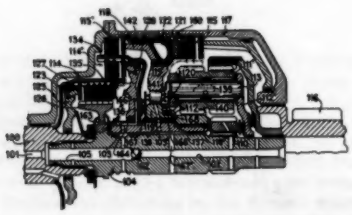
Jean Piret, Bougival, France, assignor to Automobiles Peugeot, Paris, and Regie Nationale Des Usines Renault, Billancourt, both of France

Filed June 21, 1971, Ser. No. 154,765

Claims priority, application France, June 24, 1970, 7023348

Int. Cl. F16h *57/10*

U.S. Cl. 74—763 **11 Claims**



Automatic hydraulically controlled planetary gear transmission in which two clutch devices and one of the holding devices are disposed concentrically at one end of the transmission. The planetary gear mechanism is disposed at the opposite end of the transmission. The transmission has a middle part in which are arranged in a common radial plane in this order : a centre shaft, a hollow layshaft rotatable on the centre shaft, a freewheel hub rotatable on the layshaft and connected to rotate with the planet gear carrier, means for locking the freewheel, a freewheel outer ring and an annular member. The latter is integral with the transmission case and with the freewheel outer ring and at least partly defines a cylinder receiving the piston actuating the adjacent holding device.

3,741,038

TRANSMISSION MECHANISM HAVING AN AUTOMATIC GEAR CHANGE SYSTEM

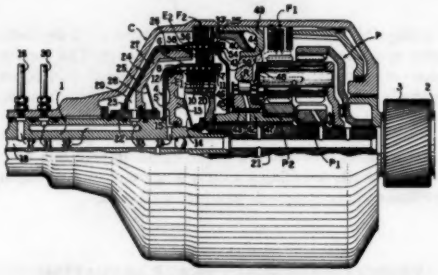
Jean Piret, Bougival, France, assignor to Automobiles Peugeot, Paris, and Regie Nationale Des Usines Renault, Billancourt, both of France

Filed July 1, 1971, Ser. No. 158,732

Claims priority, application France, July 30, 1970, 7028140

Int. Cl. F16h *57/10*

U.S. Cl. 74—763 **7 Claims**



Transmission mechanism having an automatic gear change system comprising an assembly of hydraulically controlled clutch and brake devices which include friction discs and hydraulic control cylinders supported by coaxial partly overlapping bell-shaped members whose concave sides face in the same axial direction. An end wall member has an outer periphery connected to rotate with the open end portion of the larger bell-shaped member and an inner periphery fixed to an element of a planetary gear train of the mechanism.

3,741,039

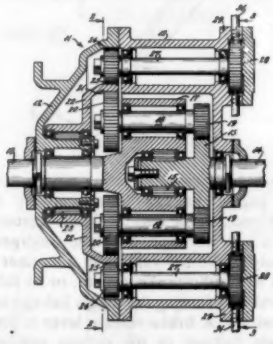
VARIABLE SPEED TRANSMISSION WITH PROPORTIONAL INVERSE TORQUE REDUCTION

Milton W. Garland, 208 W. Second St., Waynesboro, Pa.

Filed June 29, 1971, Ser. No. 158,004

Int. Cl. F16h *3/44*

U.S. Cl. 74—786 **5 Claims**



Transmission apparatus in which the input shaft may drive the output shaft at the same rotational speed or may drive the

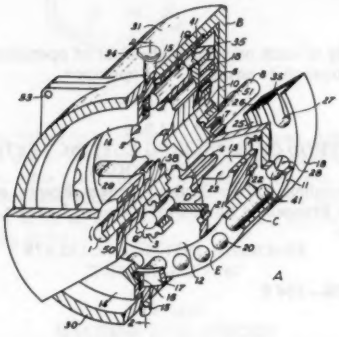
output shaft at an increased speed with proportional inverse torque reduction. The apparatus includes input and output shafts connected together by a unidirectional stop device and a gearing arrangement so that the speed of the output shaft may be increased with proportional inverse torque reduction when the input shaft is driving in one direction and having apparatus for preventing free wheeling when the output shaft becomes the driver.

3,741,040

HYDROSTATIC-MECHANICAL TRANSMISSION

Noel S. Shaw, 7158 S. Vernon Avenue, Chicago, Ill.

Filed Apr. 10, 1972, Ser. No. 242,578
Int. Cl. F16h 5/18; F16d 3/04
U.S. Cl. 74—794 10 Claims



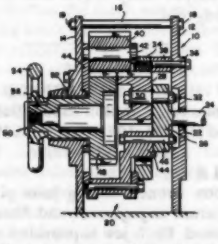
A hydrostatic-mechanical transmission arrangement comprising a casing rotatably mounting a gear carrier and sun gears journaled on either side of same for rotation about the axis of rotation of the carrier, with the carrier carrying a gear pump of which one of the meshing gears thereof is coupled to one of the sun gears, and the other pump gear is coupled to the other sun gear, and with the carrier equipped with a hydraulic motor of the axial piston type including an annular reaction plate against which the motor pistons react that is non-rotating in nature, but adjustable about a pivot axis normal to the axis of rotation of the carrier. A hydraulic conduit arrangement including a flow orienting valve plate fixed to the casing but in liquid tight relation with the carrier confines hydraulic liquid flow to between the pump and motor. Either of the sun gears may serve as the input, but by reversing the functions of the motor and pump, the carrier may be driven to serve as the input.

3,741,041

SPEED REDUCTION GEAR ASSEMBLY

Francis H. Boor, Lafayette, Ind., assignor to Fairfield Manufacturing Co., Lafayette, Ind.

Filed Aug. 19, 1971, Ser. No. 172,998
Int. Cl. F16h 1/28
U.S. Cl. 74—801 5 Claims



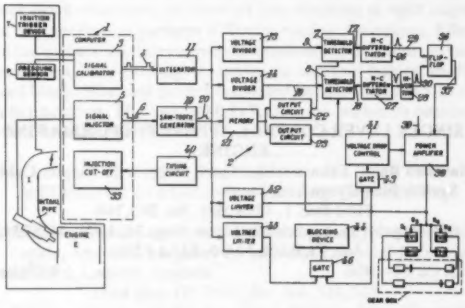
A speed reduction gear assembly wherein a large speed reduction is realized from input to output using a minimum of four gears. The input is coaxial with the output. The large gear reduction is a result of the effective rolling center of one of the gears being located at a predeterminable radial point other than on the pitch diameter of the gear it is driving. Alternative embodiments are provided which allow, through the use of additional gears, the transfer of a large amount of torque and permit the rotational output to be taken on the input side of the gear assembly.

3,741,042

ELECTRONIC CONTROL DEVICES FOR MULTISTAGE GEAR BOXES

Raymond Ravenel, Sceaux, France, assignor to Societe Amonyme Automobiles Citroen, Paris, France

Filed Mar. 5, 1971, Ser. No. 121,253
Claims priority, application France, Mar. 10, 1970, 7008571
Int. Cl. B60k 21/00; F16h 3/74
U.S. Cl. 74—863 25 Claims



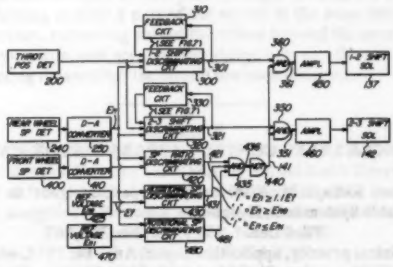
The vehicle is provided with an electronic computer for producing an injection control signal whose duration determines the time of opening of the injectors. The device is arranged so that the injection control signal acts, as a function of its duration, on a one or more thresholds of at least one threshold detector sensitive to the rotary speed of the engine and adapted to control the gear changes. Other parameters of the operation of the engine and the state of the load may be fed to the computer, for example the pressure in the intake pipe of the engine.

3,741,043

WHEEL SPIN CONTROL SYSTEM FOR AUTOMATIC TRANSMISSIONS

Minoru Oya; Shin Ito, and Seitoku Kubo, all of Toyota-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Apr. 5, 1972, Ser. No. 241,197
Claims priority, application Japan, Apr. 10, 1971, 46/22624
Int. Cl. B60k 21/00; F16h 3/74
U.S. Cl. 74—866 11 Claims



In a vehicle transmission of the type in which the torque is transmitted between the drive shaft and the driven shaft, a

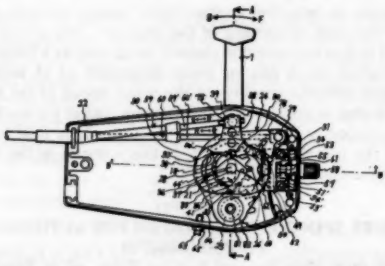
control system for an automatic transmission comprising a gear shift engagement unit including engaging means with hydraulic servos, a source of fluid pressure for generating fluid pressure for said hydraulic servos, shift valves adapted to distribute the fluid pressure to said hydraulic servos, driven-wheel speed-responsive signal generating means, engine torque-responsive signal generating means, vehicle speed-responsive signal generating means, shift discriminating circuits each for receiving and performing computational operations on the signals from said signal generating means, and a speed ratio discriminating circuit for receiving said driven-wheel speed-responsive signal and said vehicle speed-responsive signal to compute the slip factor of the driven wheel, whereby said shift valves are selectively controlled according to the output signals from said shift discriminating circuits and said speed ratio discriminating circuit to thereby reduce the transmission of the torque between the transmission input or drive shaft connected to the engine and the transmission output or driven shaft which connects to the driven wheels when they begin to spin at low speeds due to slippery conditions.

3,741,044

SINGLE LEVER CONTROL APPARATUS FOR MARINE ENGINE

Masanao Baba, Takarazuka, Japan, assignor to Nippon Cable System Inc., Hyogo-ken, Japan

Filed Dec. 1, 1971, Ser. No. 203,766
Claims priority, application Japan, Aug. 31, 1971, 46/67313
Int. Cl. B60k *21/00*; F16d *47/00*
U.S. Cl. 74—876 **9 Claims**



A single lever control apparatus for marine engine for operating the clutch and the throttle. The throttle operating member and the clutch operating member are operated independently of each other and when out of operation they are locked to preclude an inadvertent operation.

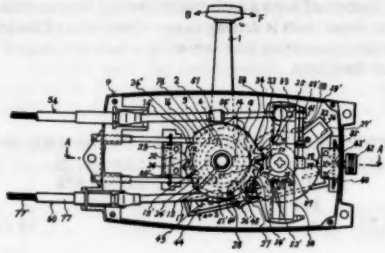
3,741,045

SINGLE LEVER CONTROL APPARATUS FOR MARINE ENGINE

Tetsuo Kobayashi, Nishinomiya, Japan, assignor to Nippon Cable System Inc., Hyogo-ken, Japan

Filed Dec. 1, 1971, Ser. No. 203,767
Claims priority, application Japan, Aug. 14, 1971, 46/61720
Int. Cl. G05g *13/00*; F16d *23/00*
U.S. Cl. 74—876 **15 Claims**

A single lever control apparatus for marine engine for operating the clutch and the throttle. The throttle operating member and the clutch operating member are operated independently of each other and when out of operation they are locked to preclude an inadvertent operation.

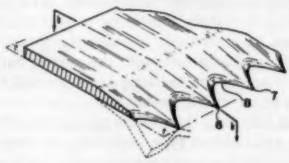


3,741,046

METHOD OF PRODUCING CUTTING TEETH ON CUTTING TOOLS

Rene Chambon, Tarbes-Hautes-Pyrenees, France, assignor to Societe Francaise d'Equipment Menager, Lourdes, Pyrenees, France

Filed Nov. 4, 1971, Ser. No. 195,679
Int. Cl. B21k *11/02*
U.S. Cl. 76—104 R **3 Claims**



The disclosure herein describes a method of producing cutting teeth on the blade of a cutting tool; the method consists first in folding longitudinally, by stamping, one part of the blade to an angle of less than about 15°, secondly, in producing, by stamping a portion of the folded part, a series of substantially identical indentations side by side along the edge of the blade, the line separating the stamped and unstamped zones having the appearance of a plurality of juxtaposed arcs subtended by the edge of the blade, the concavity of the indentations extending towards the salient angle side of the fold line; and, thirdly, in carrying out a planing operation on the face of the folded part of the blade located on the reentering angle side of the fold line. The planing operation provides a chamfer in the edge of the blade and, by the removal of the projections formed by the convex part of the indentations, the planing step produces sharp-edged scallops which form the teeth of the cutting tool.

3,741,047

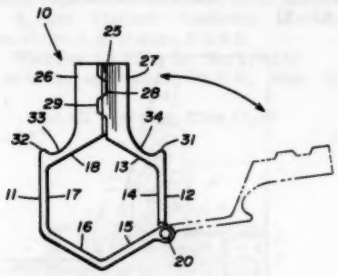
HINGED BOX WRENCH

Benjamin L. Kanowsky, P.O. Box 35184, Dallas, Tex.

Filed Dec. 20, 1971, Ser. No. 210,056
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 R **13 Claims**

A sectional box wrench having jaws pivotally hinged to swing apart to permit engagement and disengagement with a fastener is disclosed. Each jaw is provided with a lug half extending in the plane of the jaws which, when the jaws are closed, interlock to form a lug. The interlocking lug construc-

tion prevents relative movement between wrench jaws and serves to efficiently transmit torque to the jaws allowing the jaws to be relatively thin. A special socket drive for use with the wrench fits over the lug and has arms that project laterally beyond the lug to engage shoulders formed on the outer side



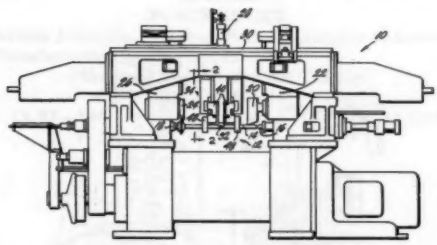
of both jaw halves to transmit torque to the jaws. Adapters to permit the use of conventional ratchet and torque wrenches are shown. Also a special ratchet adapted for use with the hinged wrench and socket combination is also disclosed which permits the drive to be ratcheted while the handle remains substantially in the same position.

3,741,048

MACHINE TOOL SYSTEM

Bruce G. Peuterbaugh, Mount Clemens, Mich., assignor to La Salle Machine Tool, Inc., Warren, Mich.

Filed Aug. 27, 1970, Ser. No. 67,371
Int. Cl. B23b *15/00*
U.S. Cl. 82—2.5 **2 Claims**



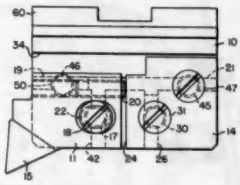
A machine tool system which includes a plurality of work stations at which workpieces are progressively shaped to a final form and a stationary track assembly extending longitudinally past the work stations. A plurality of workpiece holding units are mounted on the track assembly and are movable longitudinally of the track assembly for advancing workpieces carried thereby to successive work stations. Each of the units includes a downwardly extending body member and a pair of jaws, the jaws being mounted for movement between a workpiece release position located above the workpieces at the work stations and a workpiece gripping position extending downwardly and disposed in gripping engagement with horizontally opposite sides of a workpiece. Thus, the workpiece advancing mechanism is located entirely above the workpieces so that the chips and other metal pieces resulting from work operations carried on at the work stations cannot accumulate on and thus adversely affect the operation of the workpiece advancing mechanism.

3,741,049

CUTTING TOOL

George B. Anderson, Rochester, N.Y., assignor to USM Corporation, Boston, Mass.

Filed June 7, 1971, Ser. No. 150,280
Int. Cl. B23b *29/00*; B26b *1/00*
U.S. Cl. 82—37 R **7 Claims**



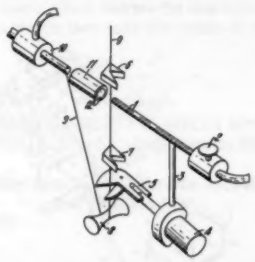
A tool holder with a carbide tool bit may be secured on a tool block selectively in either of two positions at right angles to one another to perform different cutting operations. Filler cartridges are used in conjunction with the tool holder. In one position a filler cartridge helps locate the tool holder on the tool block. The tool holder is located by the tool block in its other position. The filler cartridges may be ported to conduct coolant to the points of cut.

3,741,050

METHOD OF STRINGING A THREAD THROUGH A HOLE

Robert Reid Coats, and John Michael Greenway, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 10, 1971, Ser. No. 141,705
Claims priority, application Great Britain, May 27, 1970, 25,530/70; June 9, 1970, 27,840/70
Int. Cl. B20d *7/08*; G03b *1/56*
U.S. Cl. 83—22 **1 Claim**



A method whereby a continuously advancing strand issuing from a supply is threaded through an aperture with a closed circumference comprising the steps of blowing the strand to divert it into an open looped path directed towards the aperture, blowing at least a part of the strand in the loop through the aperture, entraining part of the strand beyond the aperture in a suction gun, and severing the strand between the gun and a collecting means after the strand has been diverted.

3,741,051

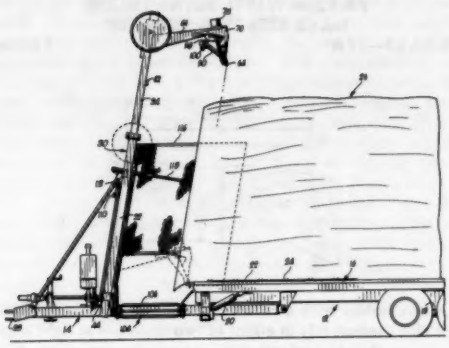
STACK FEEDING METHOD AND APPARATUS

Dean P. Brooks, Hesston; Ferol S. Fell; Harold Keith Garrison, both of Newton, all of Kans., and Richard W. Job, Racine, Wis., assignors to Hesston Corporation, Hesston, Kans.

Filed May 26, 1971, Ser. No. 146,882
Int. Cl. A01f *29/00*; B26d *7/06*
U.S. Cl. 83—23 **29 Claims**

Livestock feed such as hay is fed from a stack by loading the stack on a bed and transporting it to a feeding point. The stack

is then advanced intermittently along the bed to a position partially underlying a raised cutter bar slicer. As the slicer is



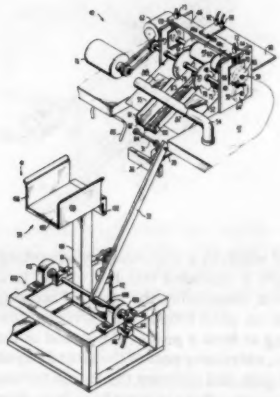
lowered, the slices are pushed away from the stack and caused to gravitate to a lateral conveyor which transfers the hay thus sliced from the stack to a point of discharge.

3,741,052

BUTTON LINE STRIP CUTTER AND STACKER

Wade W. Frost, and Lamar G. Shy, both of Vidalia, Ga., assignors to Oxford Industries Inc., Atlanta, Ga.

Filed Apr. 22, 1971, Ser. No. 136,338
Int. Cl. B26d 7/06
U.S. Cl. 83—24 6 Claims



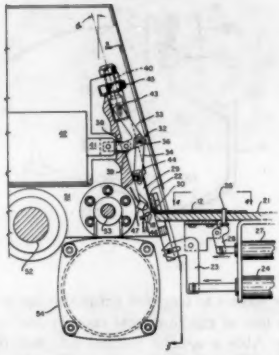
A button line strip cutter and stacker for manufacturing center plaits of shirt fronts having stripe designs. Strips of cloth from which the center plait pattern parts are to be formed are moved through a cutting zone with the stripe design of the strips of cloth passing through the middle of the cutting zone and the side edges of the strips of cloth are simultaneously and progressively cut away from the center portion. The edge portions move into a flow of air and are carried to a remote waste area while the center portions move with another air flow and are stacked away from the cutting zone.

3,741,053

CODE NOTCHER FOR DATA CARRIER

Joseph E. Byrne, Gilbert F. Clifford, both of Los Altos; Donald F. Smith, Palo Alto, and Arthur W. Odell, Atherton, all of Calif., assignors to Varian Adco, Palo Alto, Calif.

Filed Nov. 15, 1971, Ser. No. 198,896
Int. Cl. B26f 1/12
U.S. Cl. 83—71 11 Claims



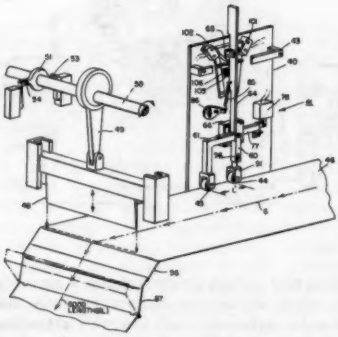
A code notcher for microfiche carriers which includes a mechanical toggle apparatus for punching the notches in the carrier and a clamp and backstop for positioning the carrier in a position to be notched.

3,741,054

MATERIAL THICKNESS DETECTOR

Joel M. Alperin, Scranton, and James P. Murphy, Pittston, both of Pa., assignors to Philadelphia College of Textiles and Science, Philadelphia, Pa.

Filed Oct. 26, 1971, Ser. No. 192,441
Int. Cl. B65h 7/06, 29/62, 35/06
U.S. Cl. 83—80 24 Claims



Detector apparatus for detecting thickness variations of a continuous strip of material, adapted to detect relative variations in excess of a given percentage of the desired reference thickness, and further adapted to be self-adjusting to detect, with a substantially constant sensitivity, thickness variations with respect to any reference thickness of the passing material which is substantially uniform for more than a predetermined length. A cam with a symmetrical surface is positioned between a pair of switches, and carried by a rotatable arm which is responsive to thickness variations. The pivot position of the rotatable arm is normally held fixed, and is changeable in position only when the passing material changes to and maintains a different thickness for more than a given length.

3,741,055

AUTOMATIC TRANSFER PRESS WITH VERTICAL STAMPING SURFACES FOR STAMPING CONCENTRIC PARTS OF SHEET MATERIAL

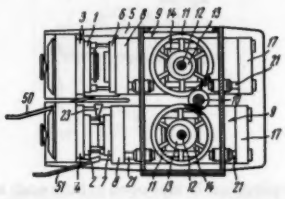
Rafael Tevosovich Sarkisov, ulitsa Aga-Neimatully, 20, kv. 29; Ernst Arakelovich Stepanian, ulitsa Druzhby molodezhi, 2, kv. 33; Jury Vagarshevich Ovanesov, ulitsa Mayakovskogo, 17, kv. 8, and Vladimir Vasilievich Maltsev, ulitsa Chapaeva, 61, kv. 6, all of Baku, U.S.S.R.

Filed Jan. 13, 1972, Ser. No. 217,521

Claims priority, application U.S.S.R., Mar. 22, 1971, 1628702

Int. Cl. B26f *1/02*; B26d *11/00*

U.S. Cl. 83—132 5 Claims



An automatic transfer press with vertical stamping surfaces for stamping two concentric parts of sheet material. The press comprises two compound die sets arranged one above the other, with vertical stamping surfaces. The punches of the die sets are secured to slides moving horizontally in the opposite directions. Each slide is made in the form of a link mechanism consisting of a slide block and a link on which the cross-heads with punches are mounted. The link is made in the form of a vertical plate with a port accommodating the slide block secured on the eccentric of the press driven shaft.

3,741,056

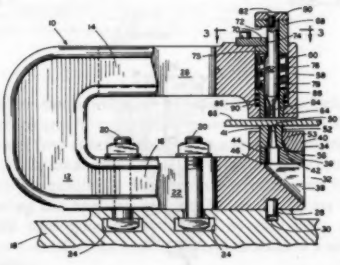
PUNCH DEVICE

Lawrence J. Saladin, Evergreen Park, Ill., assignor to Accurate Manufacturing Co., Chicago, Ill.

Filed Aug. 23, 1971, Ser. No. 173,926

Int. Cl. B26f *1/14*

U.S. Cl. 83—140 11 Claims



A hand positionable portable perforating device having a punch member retained in the upper arm of a C-shaped frame by a tangentially slotted bushing which functions both as a punch guide by surrounding the periphery of the upper portion of the punch and as a punch retaining member by having a lower portion engaging a shoulder on the punch. A die which is supported in the lower arm by a stepped mounting pad and a mating restraining member is thereby positively locked, aligned and easily disassembled.

3,741,057

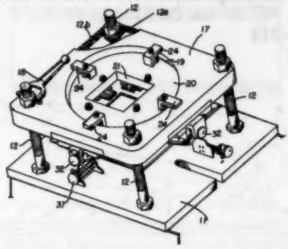
HYDRAULIC LABEL DIE CUTTING MACHINE

Howard R. Maschinot, Erlanger, Ky., assignor to The Printing Machinery Company, Cincinnati, Ohio

Filed June 17, 1970, Ser. No. 47,019

Int. Cl. B26d *5/20*

U.S. Cl. 83—222 7 Claims



A simple hydraulically operated label die cutting machine wherein the ram which forces a stack of labels through the cutting die, and a shuttle which moves a stack of labels into position over the ram, are both hydraulically operated. The shuttle and ram operate in timed relation to each other automatically. Provision is made for jogging either the ram or the shuttle independently of each other. A safety switch is provided to stop the machine if the operator's hand is still on a stack of labels being moved into position by the shuttle when the stack of labels is about to enter into position over the ram. Additional safety for the operator is provided by relatively low pressure operation of the piston which actuates the shuttle, so that the shuttle can be held manually without great exertion. The cutting die is held by two pairs of mutually opposed chuck jaws whereby the die may be adjusted linearly in two directions at right angles to each other, and the chuck jaws are mounted on a plate which may be rotated and clamped in the desired position for the rotational alignment with the stack. The die holding portion of the machine is anchored to the main machine frame which carries the ram cylinder by means of corner posts, which thus take the strain of the die cutting operation.

3,741,058

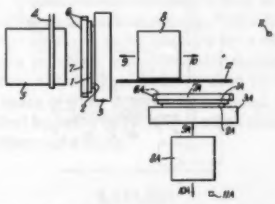
APPARATUS FOR CUTTING SHEET MATERIAL

Ian Anthony Fish, 8, Handel Close, Canons Drive, Edgware, England

Filed June 8, 1970, Ser. No. 44,146

Int. Cl. B26d *5/20*

U.S. Cl. 83—277 17 Claims

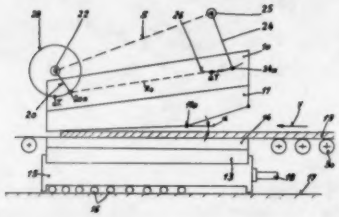


Pieces of sheet material are picked up one at a time off a stack by suction means and each one is pulled to a mechanism which clamps it and cuts a straight edge on it and is then pulled further before the same mechanism clamps it and cuts another straight edge on it parallel to the first. As an alternative, an end of a continuous web of sheet material is pulled to a mechanism which clamps it and cuts pieces off it. In both cases, if desired each piece may proceed directly to apparatus which cuts two more straight edges on it so that the sheet is then a true rectangle.

3,741,059
FLYING SHEARS FOR TRIMMING METAL PLATES AND SHEETS

Gunther K. Fries, Neunkirchen/Saar; Ernst-Gunther Oberhauser, Rohrbach/Saar, and Friedel Betz, St. Ingbert/Saar, all of Germany, assignors to Moeller & Neuman, St. Ingbert/Saar, Germany

Filed Sept. 15, 1971, Ser. No. 180,690
Int. Cl. B23d 25/10
U.S. Cl. 83—315 6 Claims

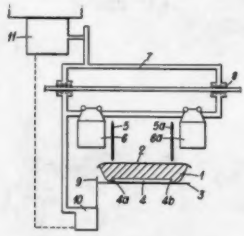


A flying shears for trimming plates or sheets has an upper cutter carrier which is connected at its plate exit end to a continuously rotating crank, and at its plate inlet end to a rocker member. The upper cutter has a straight cutting edge which may have an extension directed away from the plate feed plane. The lower cutter may have a straight cutting edge and may be displaceable in and against the plate feed direction by a drive which permits the cutting forces to modify the plate speed. Alternatively the lower cutter may have a curved cutting edge and may be displaceable in a similar manner to the upper cutter. Means are provided for so modifying the displacement speed of the cutters that plates or sheets can be fed through the shears at a uniform speed.

3,741,060
TRIMMING FOAM LAMINATES

Ian Thornton Owen, Stockton-on-Tees, England, assignor to Imperial Chemical Industries, Limited, London, England

Filed May 18, 1971, Ser. No. 144,535
Claims priority, application Great Britain, June 4, 1970, 26,994/70
Int. Cl. B26d 5/00
U.S. Cl. 83—368 2 Claims

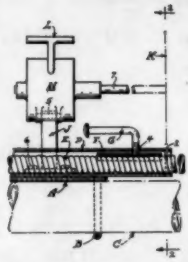


Apparatus for trimming a rigid polyurethane foam laminate comprising a frame freely movable laterally, a pair of carriages clamped to the frame a preselected distance apart and movable with the frame, cutting means mounted upon each carriage and movable therewith, each cutting means being mouunted upon its respective carriage a preselected distance from the other and from the adjacent longitudinal edge of the laminate, means for continuously sensing lateral movement of the laminate and means responsive to lateral movement of the laminate for causing corresponding lateral movement of the frame, the carriages and their respective cutting means.

3,741,061
PORTABLE HOLDER AND SAW BLADE GUIDE SLOT FOR RIDGEDLY CLAMPING AND CUTTING FLEXIBLE ARMORED ELECTRICAL CABLE AT RIGHT ANGLES TO THE CABLE AXIS

Peter V. Bevacqua, 15881 Via Del Sol, San Lorenzo, Calif.

Filed Dec. 31, 1970, Ser. No. 103,059
Int. Cl. B27b 5/20; B23d 45/04
U.S. Cl. 83—454 4 Claims

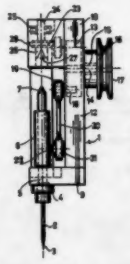


A portable cylindrical holder open at both ends and adapted to receive a portion of a flexible armored electrical cable that is to be cut, the cylindrical holder having a transversely extending hack saw blade receiving slot that extends at right angles to the longitudinal axis of the holder. An adjustable clamping member is disposed within the cylindrical holder and has one end disposed adjacent to the slot. Any desired length of electrical cable is fed through the cylindrical holder and then the portion of cable that is to be cut transversely is rigidly held against twisting by tightening the clamp onto the cable. The operator can now use the slot as a guide for a hack saw blade that will cut the cable at right angles to the cable axis. The device can be manually held while being used or it may be secured to a scaffolding or any other support. A motor driven disc saw for cutting the cable can be mounted on a base plate that is welded to the cylindrical holder.

3,741,062
CUTTING DEVICE

Hendrik Glastra, Enschede, Netherlands, assignor to N.V. Maatschappij Voor Industriele Research en Ontwikkeling, Enschede, Netherlands

Filed Apr. 8, 1971, Ser. No. 132,291
Int. Cl. B26d 5/14
U.S. Cl. 83—556 4 Claims



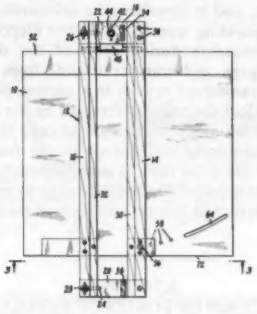
A cutting device provided with a needle-shaped cutting member which is at its free end provided with at least one cutting edge at an angle with the longitudinal axis and coupled to a driving mechanism which is constructed in such a way that during operation the cutting edge is periodically raised to above the material and can be rotated at the same time through an angle.

3,741,063

ADJUSTABLE JIG FOR PORTABLE ELECTRIC SAWS

Frank N. Bretthauer, Route 3, Putnam Valley, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,983
Int. Cl. B27b *9/04, 5/20*
U.S. Cl. 83—745 7 Claims



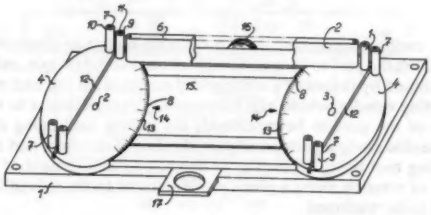
A jig for portable electric saws is disclosed. With the jig, wood and other materials can be cut with electric hand saws to the same degree of precision as is now available only with bench and radial arm saws.

3,741,064

MITRE-BOX

Andre Quenot, Besancon, France, assignor to Manufacture Quenot Mabo, Besancon, France

Filed June 29, 1971, Ser. No. 157,879
Claims priority, application France, Oct. 7, 1970, 7025902; Jan. 14, 1971, 7101873
Int. Cl. B27g *5/02*
U.S. Cl. 83—767 10 Claims



This mitre-box comprises a base plate on which a pair of spaced platforms are pivotally mounted and provided each with pairs of free-rotating rollers disposed for guiding a cutting tool. A longitudinal guide member is pivotally mounted to said platforms for guiding a workpiece. A protractor is provided for adjusting the angular position of the platforms in relation to a fixed reference mark carried by said base plate, and means are provided for locking the platforms in a selected angular position.

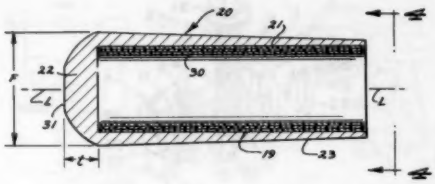
3,741,065

GUITAR SLIDE BAR APPARATUS

William E. Harris, 3017 East Calhoun Boulevard, Minneapolis, Minn.

Filed July 22, 1971, Ser. No. 165,199
Int. Cl. G10d *3/00*
U.S. Cl. 84—319 9 Claims

A fretted neck of a guitar having a plurality of strings spaced above the fretboard and slide bar apparatus that includes a tubular portion having a first end, a second end axially opposite the first end, a finger receiving chamber opening through the first end and a frusto conical outer surface having a major base remote from the first end, a cap portion integrally joined to



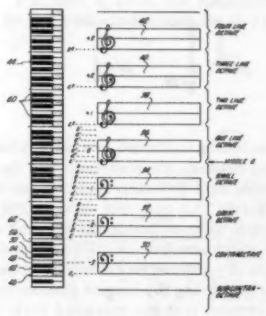
the second end and having a curved outer surface, and a rolled length of plastic film in the finger receiving chamber that may be cut off to provide for selectively sizing the effective opening of the finger receiving chamber to a given user's finger.

3,741,066

MUSICAL NOTATION AND ACTUATOR SYSTEM

Ralph G. Cromleigh, 4511 Lasheart Drive, La Canada, Calif.

Filed Mar. 5, 1971, Ser. No. 121,343
Int. Cl. G09b *15/08*
U.S. Cl. 84—478 8 Claims



A musical notation and actuator system is disclosed. The notation system includes the use of identical staves which uniquely correspond to octaves. Each of the staves includes three uniformly spaced lines which correspond to particular musical tones. Alphanumeric designators may be used to particularly identify a stave with an octave. Notes superposed on the staves designate tones to be sounded by a musical instrument. Notes are provided with particular shapes to indicate when semi-tones, either higher or lower than the tone defined by the line or space of a stave, are to be sounded. The actuator system is typified by being physically marked to correspond to the lines and spaces of a stave.

3,741,067

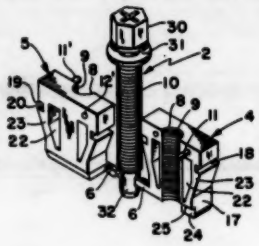
FASTENING ASSEMBLY

Thomas M. Moran, Cleveland, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed May 27, 1971, Ser. No. 147,571
Int. Cl. F16b *37/10*
U.S. Cl. 85—72 7 Claims

A fastener assembly for mounting with an apertured support panel comprising a pair of complementary nut sections attached to an end portion of an adjustment screw. The nut sections being folded about said screw in a confronting face-to-face relationship with each nut section having an arcuately

concave threaded section for engagement with the threads of the screw when said members are in face-to-face relationship.



The nut includes deflectable shank elements adapted for locking the fastener assembly in the support panel.

3,741,068

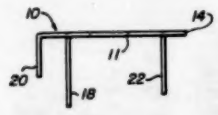
WALLBOARD STAPLE

Julian Andruskiewicz, 280 Willow Road, Elmhurst, Ill.

Continuation-in-part of Ser. No. 43,413, June 4, 1970. This application Jan. 3, 1972, Ser. No. 215,203

Int. Cl. F16b *15/00*

U.S. Cl. 85—13 **4 Claims**



A staple for anchoring wallboard to a jamb, wherein the staple spans the gap between the wallboard and the jamb, such staple having down bent portions, including an intermediate spacer to move into the gap and against the jamb, forward piercing points to be embedded in the jamb at a distance no greater than about one-half its thickness, and a rearward point to pierce the drywall and be embedded in the underlying structure, said spacer being the longest and the rearward part being the next longest that the rearward part may be first driven through drywall after the staple is positioned.

3,741,069

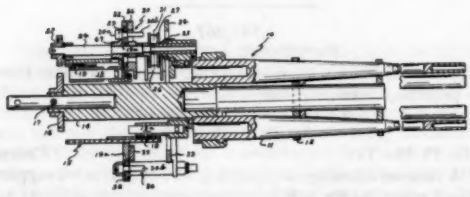
FEED SYSTEM FOR A NON-ROTATING MULTI-BARREL GUN

Paul E. Stewart, Deerfield, Ill., and Dale M. Davis, Freeport, Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 10, 1972, Ser. No. 233,595

Int. Cl. F41d *7/02*

U.S. Cl. 89—11 **10 Claims**



A test model machine gun having an endless ammunition belt continuously moving during operation, a stationary multi-barrel cluster arranged about the gun axis and a combined feed and gun-operating mechanism including a squirrel cage automatically rotatable in orbit about the barrel cluster in synchronism with the moving belt and equipped with a series of ammunition feed spaces, a four-tooth feed sprocket geared to, and thus automatically operable therewith, for removing rounds from the moving belt for their placement in successive squirrel cage-feed spaces, and a bolt-operating drive cam rotatable within, and in simultaneous orbit with, the squirrel cage and incorporating transfer, feed and ejection sprockets automatically rotatable during orbit of the drive cam to respectively engage and transfer rounds from the squirrel cage, feed the transferred rounds to a captive position in the bolt heads and eject the rounds extracted by the bolts for subsequent positioning in alternate squirrel cage-feed spaces. A four-tooth ejection sprocket, geared to the four-tooth feed sprocket and to the drive cam, is simultaneously operative in sequence with rotation of the squirrel cage to engage the extracted rounds returned thereto and replace them in the moving belt.

3,741,070

PRODUCTION OF BODIES OF REVOLUTION

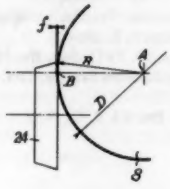
Charles William Berthiez, 5 Avenue Eglantine (Suisse), Lausanne, Switzerland

Filed June 29, 1970, Ser. No. 50,422

Claims priority, application France, June 30, 1969, 69622059

Int. Cl. B23c *3/04*

U.S. Cl. 90—11 C **1 Claim**



A method and machine for machining bodies of revolution in which the part to be machined is rotated about its axis and is machined by means of a milling tool mounted on the end of a rotating spindle, whose axis is essentially perpendicular to the axis of the part to be machined, the milling tool being displaceable along a path parallel to the axis of the part, and the milling tool being adjustable in height by displacement of its axis of rotation along a plane perpendicular to the axis of the part to be machined.

3,741,071

SENSING APPARATUS FOR CENTERING A CUTTING HEAD AND TOOL WITH RESPECT TO A WORK PIECE

Nils Hoglund, Short Hills, N.J., assignor to Hoglund Engineering and Manufacturing Company, Inc., Berkeley Heights, N.J.

Filed Nov. 12, 1970, Ser. No. 88,798

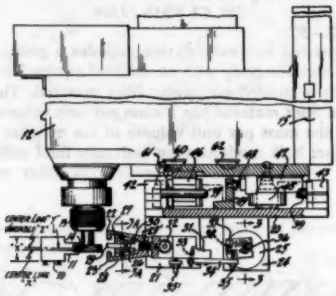
Int. Cl. B23b *3/00*

U.S. Cl. 90—11 R **5 Claims**

The apparatus for positioning a cutter or milling head assembly centrally of work pieces having variable dimensions, includes a cutting or milling head assembly mounted for movement in three dimensions. The milling head and tool, during cutting operations, are movable laterally to make a cut centrally of two parallel surfaces, the thickness of the work pieces in most instances varying from work piece to work piece.

Attached to the milling head assembly by means of a carriage or slide is a sensing assembly. This assembly is movable toward and from the work piece while the milling head is dis-

placed laterally from the work piece. The sensing assembly has cooperating sensing fingers which in their forward position engage the opposite surfaces of the work piece to determine the center line of the work piece.



This information is transmitted through a sensing valve associated with the fingers to a cooperating hydraulic motor and cam which control the vertical position of the milling head and cutter to center them with respect to the work piece, the milling head and cutter assembly being mounted on a slide controlled by the cam.

3,741,072

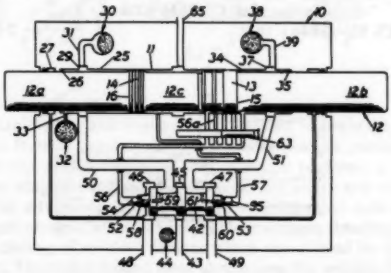
HYDRAULIC FLUID ACTUATED PERCUSSION TOOL

Gunnar Vigg Riss Romell, 182 62 Djursholm, Smedjevagen, and Ake Torsten Eklof, 127 36 Skarholmen, Satragardsvagen, both of Sweden

Filed Feb. 17, 1971, Ser. No. 116,014

Int. Cl. F01l *25/04, 31/00*

U.S. Cl. 91—290 **4 Claims**



A hydraulic percussion tool such as a drill, a crusher or a ram, having a hammer piston reciprocating in a cylinder. A hammer piston controlled valve is arranged to pressurize and drain alternately two pressure chambers formed between the cylinder and the hammer piston so as to cause reciprocation of the hammer piston. Energy accumulators are connected directly to the pressure chambers.

3,741,073

HYSTERETIC EQUALIZATION IN REDUNDANT ELECTRICALLY OPERATED FLUID POWERED SERVOPOSITIONING APPARATUS

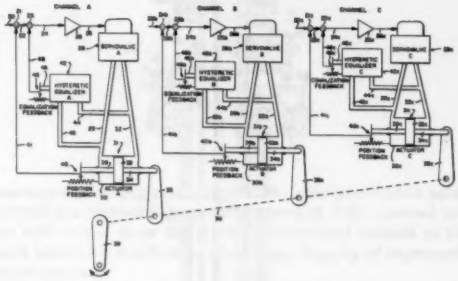
Kenneth D. Garnjost, East Aurora, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Filed Jan. 29, 1971, Ser. No. 110,927

Int. Cl. F15b *9/03, 9/09*

U.S. Cl. 91—363 A **12 Claims**

Hysteretic equalization means are disclosed for equalizing or matching the outputs of two or more servovalves operating simultaneously in a multi-channel or redundant servopositioning apparatus. Such equalization avoids system deadzone and reduces the transient that may occur upon shut-off of one servovalve. The equalization is accomplished by feeding back the interchannel mismatch through means having a hysteresis characteristic.



3,741,074

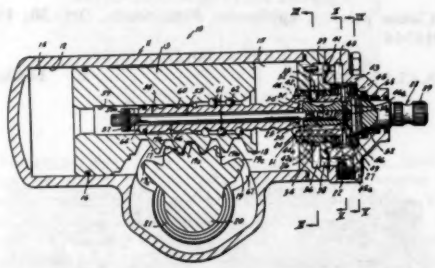
VARIABLE RATIO INTEGRAL POWER STEERING GEAR

Gerald K. Oxley, and Frederick D. Venable, both of Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio

Filed Dec. 8, 1970, Ser. No. 96,029

Int. Cl. F15b *9/10, 11/08;* F16b *13/04*

U.S. Cl. 91—375 A **6 Claims**



A variable ratio power steering gear assembly including a rack-piston and a cross-shaft mounted sector gear meshing with the teeth of the rack piston. The teeth of the sector gear are generated on a pitch radius which increases from the center to the ends of the gear to provide a steering ratio which increases from the center to the end steering positions of the assembly.

3,741,075

SAFETY APPARATUS FOR HYDRAULIC ELEVATOR JACKS

Wallace Frederick Moseley, and Robert F. Schnetzer, both of Columbus, Ohio, assignors to Plunger Lift Elevator, Inc., Columbus, Ohio

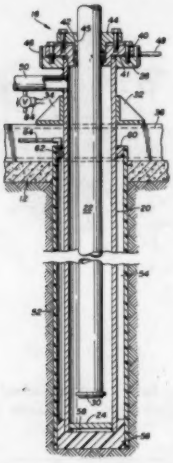
Filed Mar. 30, 1971, Ser. No. 129,450

Int. Cl. F01b *29/00;* F15b *13/042, 13/044*

U.S. Cl. 91—451 **3 Claims**

The soil-embedded, subterranean portion of a hydraulic elevator jack or cylinder is sealingly encased in a fiber glass reinforced plastic housing to protect the jack from electrolysis and corrosion. A pressure responsive safety circuit commu-

nicates with the interior of the plastic housing and is operable to detect a leak in the jack and automatically interrupt the



conventional controls for the elevator and cause a gradual, safe descent of the elevator to ground level.

3,741,076

APPARATUS OPERATING ON THE DISPLACEMENT PRINCIPLE AND USABLE BOTH AS A PUMP AND AS A MOTOR

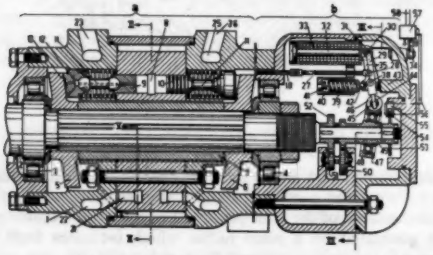
Wijbrand Jan Tulp, Utrecht, Netherlands, assignor to N.V. Machinefabriek Stork-Jaffa, Utrecht, Netherlands

Filed Oct. 29, 1970, Ser. No. 85,114

Claims priority, application Netherlands, Oct. 30, 1969, 6916344

Int. Cl. F01b *1/00, 3/00, 13/04*

U.S. Cl. 91—480 **14 Claims**



Apparatus operating on the displacement principle and usable both as a pump and as a motor, comprising a housing containing a number of displacement chambers having one or more plungers movable therein and coupled to a rotating shaft, said housing being provided with a first connection and with a second connection for a working medium, wherein the displacement chambers are each provided with a distribution system being coupled to control means which, at the beginning of each ingoing plunger stroke during which the displacement chamber decreases in volume and at the beginning of each outgoing plunger stroke during which the displacement chamber increases in volume, so adjust the distribution system under the influence of an impulse from the exterior that the distribution system connects the displacement chamber to one of the two connections selectively.

3,741,077

PISTON ASSEMBLY

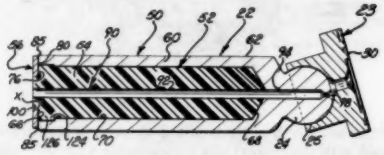
Alan D. Hulsebus, Tekonsha, and Roger J. Benkovic, Marshall, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 24, 1972, Ser. No. 246,967

Int. Cl. F01b *13/04*

U.S. Cl. 92—57 **9 Claims**

An improved hydraulic device includes a piston assembly having a metallic body with an internal cavity. The cavity is filled with a molded polymeric filler material. The molded polymeric filler material has a mass per unit volume which is less than the mass per unit volume of the metallic body and has a higher bulk modulus than hydraulic fluid utilized in association with the piston assembly. The filler material is



retained in the cavity during reciprocation of the piston assembly by an end plate or cap which is welded to one end of the body at an entrance to the internal cavity. The filler material may extend through an opening in the end plate to prevent opposite sides of the end plate from being exposed to fluid pressure.

3,741,078

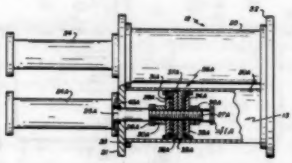
PISTON CONSTRUCTION FOR CONCRETE PUMPS

Frederick Stanley Johnson, Calgary, Alberta, Canada, assignor to Consolidated Concrete Limited, Calgary, Alberta, Canada

Division of Ser. No. 721,343, April 15, 1968, Pat. No. 3,647,325. This application Feb. 1, 1971, Ser. No. 111,211

Int. Cl. F16j *9/20*

U.S. Cl. 92—244 **2 Claims**



A concrete pump having a pair of cylinders fed from a common hopper and pumping into a common outlet. An inlet valve in the hopper and an outlet valve in the outlet are actuated by piston and cylinder assemblies which in turn control the movement of the concrete pumping pistons in the cylinders. The piston construction includes cup shaped resilient discs backed by shaped rigid discs which enable the outer perimeter of the discs to flex or roll inwardly to eliminate grit when moving in the non-pumping direction.

3,741,079

WEB SPLICING METHODS

Walter Howard Bossons, and Horst Lindstaedt, both of Summerstown, London, England, assignors to Masson Scott Thrissell Engineering Limited, London, England

Filed Oct. 13, 1970, Ser. No. 80,336

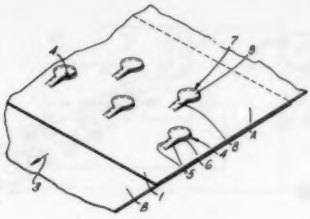
Claims priority, application Great Britain, Oct. 16, 1969, 50,904/69

Int. Cl. B31f *5/02*

U.S. Cl. 93—1.1 **4 Claims**

A method of splicing two webs of paper being fed in over-

lapping relationship in which slits are cut in both webs simultaneously to form identical superimposed tabs which are then



bent in the same direction out of the plane of the webs, to interlock the webs.

3,741,080

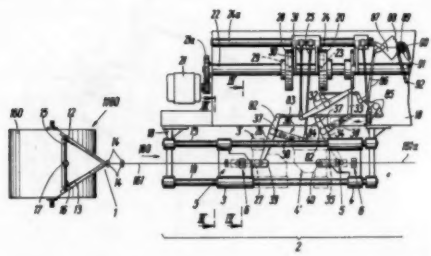
BAG FORMING AND MANIPULATING MACHINE

Paul Kuhnle, Winnenden, Wurttemberg; Fritz Gaukier, Stuttgart-Feuerbach, and Willy Gassmann, Winnenden, Wurttemberg, all of Germany, assignors to Fr. Hesser Maschinenfabrik AG, Stuttgart-Bad Cannstalt, Germany

Filed Dec. 8, 1970, Ser. No. 96,066

Int. Cl. B31b *1/64*; B26d *5/16*

U.S. Cl. 93—8 R **18 Claims**



A bag making and manipulating machine wherein the web is drawn from a supply roll by advancing devices provided on two reciprocable carriages one of which performs a return stroke while the other performs a forward stroke and vice versa. The advancing devices engage and draw the web during forward movements of the respective carriages simultaneously with closing of welding devices which are carried by the carriages. The web is folded prior to reaching the welding devices which provide the thus folded web with transverse seams which are severed by knives downstream of the carriages so that the folded and welded web yields a series of discrete bags. Pairs of such bags are moved sideways to a conveyor which transports two rows of bags lengthwise past several operating stations.

3,741,081

CARTON SLICER

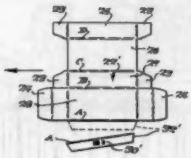
Virgil L. Lutz, Springdale, Ohio, assignor to International Paper Company, New York, N.Y.

Continuation of Ser. No. 793,346, Jan. 23, 1969, abandoned. This application Jan. 19, 1971, Ser. No. 107,842

Int. Cl. B31b *1/00*

U.S. Cl. 93—36 R **7 Claims**

Apparatus for selectively destroying improperly coded cartons in a series of cartons moving through a folding and gluing machine, comprising a code reader mounted on the machine to sense coded indicia on cartons and a cutter activated by the code reader when it senses an improper code, and synchronized to intercept and sever an element of the improperly coded carton, thus rendering the carton unusable while permitting the remainder of the severed carton to proceed without disturbing the properly coded cartons as they



pass together through the machine, the miscoded carton being severed in a manner to insure that a portion of the severed carton will extend from the stack of completed cartons as the stack leaves the machine to provide for flagging of improperly coded cartons.

3,741,082

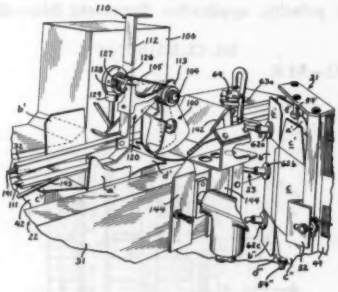
CARTON INFEED AND ERECTING APPARATUS

Robert P. Sorensen, and Leo Strombeck, both of Rockford, Ill., assignors to Anderson Bros. Mfg. Co., Rockford, Ill.

Filed Oct. 22, 1971, Ser. No. 191,724

Int. Cl. B31b *1/78, 5/02*

U.S. Cl. 93—53 R **31 Claims**



The apparatus feeds flattened carton blanks from a magazine, opens and erects the cartons, and advances the erected cartons along a conveyor for subsequent filling. Vaccum operated grippers withdraw the end carton from the magazine. An upper flap depressor depresses the forwardmost upper flap forwardly and a retractable hold-down thereafter holds the flap on its depressed position. The upper flap depressor includes first and second members which have a lost-motion connection. Means is provided for operating the grippers, the conveyor, and the upper flap depressor in timed relation.

3,741,083

COMPACTION DEVICE FOR LOOSE MATERIALS OR CONCRETE

Anatoly Samuilovich Freidenberg, ulitsa Malysheva, 111, kv. 57; Igor Pavlovich Basias, ulitsa Gagarina, 12, kv. 80, both of Sverdlovsk; Vladimir Ilich Shakhlin, ulitsa Lenina, 60/1, kv. 51, Magnitogorsk; Alexei Grigorievich Trifonov, ulitsa Pushkina, 30, kv. 14, Magnitogorsk; Timofei Grigorievich Shunin, poselok Dzerzhinskogo, ulitsa Dzhambula, 10, Magnitogorsk; Andrei Dmitrievich Filatov, ulitsa Oktyabrskaya, 15, kv. 7, Magnitogorsk; Mikhail Moiseevich Privalov, Bolshaya Dekabrskaya, 3, korpus 14, kv. 49, Moscow, and Gennady Elizarovich Ovchinnikov, ulitsa Kalinina, 3, kv. 85, Magnitogorsk, all of U.S.S.R.

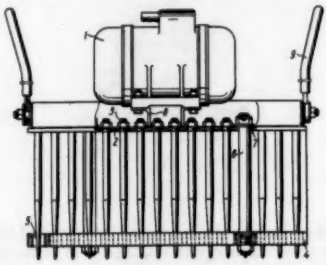
Filed Aug. 26, 1970, Ser. No. 66,998

Int. Cl. E01c *19/30*

U.S. Cl. 404—116 **3 Claims**

A compaction device for loose materials or concrete comprising a vibrator whose table is movably connected with a

plate; said plate has holes through which vibrating bars are passed, said bars being rigidly fastened to the table. The use of

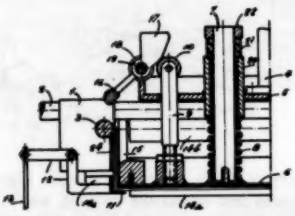


said plate imposes a static load on the compacted layer of material, thereby preventing said layer from being loosened particularly when said bars are leaving said layer.

3,741,084
CARTON ERECTING APPARATUS

Wictor Carl Olof Lindstrom, Gravadersvagen 4 L, Lund, Sweden

Filed Mar. 22, 1971, Ser. No. 126,496
Claims priority, application Denmark, Mar. 23, 1970, 148070
Int. Cl. B31b *1/44*
U.S. Cl. 93—51 R 2 Claims



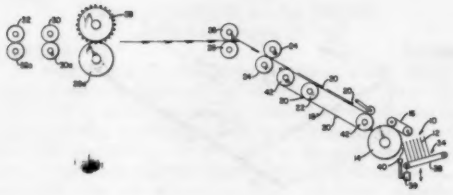
Carton erecting apparatus in which the upper die is in two parts the box-shaped lower part of which constitutes the plunger while the upper part includes a folding mechanism, and guides are provided which on continued lowering of the plunger make the folding means operative.

3,741,085
APPARATUS FOR FORMING A CONTINUOUS ASSEMBLY OF ENVELOPES OR THE LIKE

Charles O. Sutton, Phoenix, Ariz., assignor to Pak-Well Corporation, Denver, Colo.

Filed Dec. 21, 1970, Ser. No. 99,954
Int. Cl. B31b *1/06, 1/96*
U.S. Cl. 93—61 R 9 Claims

Apparatus for assembling envelopes into a continuous web having removable perforate margins characterized by improvements in: apparatus for feeding envelopes from a supply stack; preventing application of adhesive to undesired zones in the event of absence of an envelope in a spaced series of same; varying the length of adhesive strips applied adjacent edges of the envelopes; changing the angular direction of feed of the envelopes where they are collated or secured together in overlapping relationship; varying the position of the collating station to accommodate envelopes of varying height; optional features include collating the envelopes on a previously perforated carrier web; and, applying reinforcing strips to the

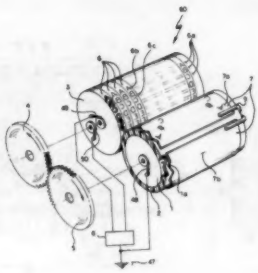


edges of the web when the overlap is relatively small and strengthening of the web at such zones is desired.

3,741,086
CYCLIC DRUM PRINTER

Michael J. Markakis, Palo Alto, Calif., assignor to SCM Corporation, New York, N.Y.

Filed Sept. 18, 1972, Ser. No. 290,050
Int. Cl. B41b *17/12*
U.S. Cl. 95—4.5 18 Claims



High quality non-impact printing based on transfer of images from a revolving font drum to a page blank carried by a receptor drum rotating with the same surface velocity as the font drum, but precessing with respect to the former, the images being developed upon transfer of a full page of information to the blank. Alternatively, the receptor drum can have an image-receiving surface for intermediate storage of images and subsequent transfer of these images to a page blank for visual development or subsequent visual development and transfer of the visible images to a page blank.

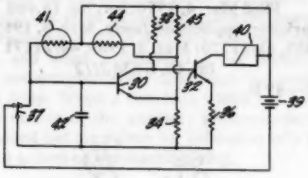
3,741,087
ELECTRIC SHUTTER EXPOSURE-TIME CONTROL CIRCUIT HAVING COUNTER LIGHT COMPENSATION

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

Filed Feb. 9, 1971, Ser. No. 113,840
Claims priority, application Japan, Feb. 12, 1970, 45/11470
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT 3 Claims

An exposure-time control circuit having a photoelectric cell and a capacitor coactive in a delay circuit to control exposure time controlled by a switching circuit triggered by a delayed signal in dependence upon the brightness of a subject in a scene or field being photographed and sensed by the photoelectric element. A compensation photoelectric cell determines the level at which the switching circuit is triggered

in dependence upon the scene brightness and counter light it senses. The circuit provides for a method of taking a photograph of a scene compensated for counter light from the background of the scene.

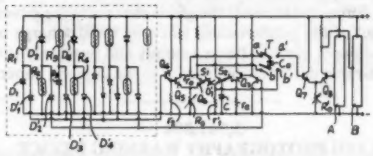


3,741,088

PHOTOSENSITIVE SYSTEM FOR RESPONDING TO DIFFERENT LUMINOSITIES OF AN OBJECT

Tsukumo Nobusawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 23, 1971, Ser. No. 183,040
Claims priority, application Japan, Oct. 2, 1970, 45/85914
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CT 9 Claims



A photosensitive system to be used in connection with photography for responding to regions of different luminosity of an object which is to be photographed. The system includes a detector circuit for detecting the regions of an object where the latter has maximum and minimum luminosity and for providing a signal corresponding to the average luminosity at an object. A control circuit is electrically connected with the detector circuit for receiving the latter signal therefrom, and an electrically-responsive structure is electrically connected with and actuated by the control circuit to produce, in connection with photographing the object, an operation according to an input received from the control circuit and determined by the signal corresponding to the average luminosity.

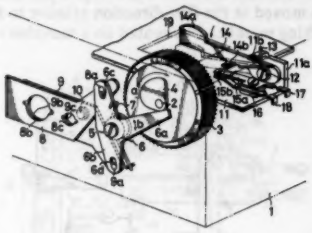
3,741,089

DEVICE FOR OPERATING MAIN SWITCH OF EXPOSURE INDICATING CIRCUIT IN CAMERA

Yoshiro Takada, Otokuni, and Maki Yamashita, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 9, 1971, Ser. No. 206,297
Int. Cl. G03b 7/02, 7/12; G01j 1/42
U.S. Cl. 95—10 C 7 Claims

A detecting member for detecting that an exposure control member is in operation keeps the main switch of an exposure indicating circuit closed to energize the indicating circuit while the amount of exposure is being controlled. Upon completion of exposure control, the detecting member opens the switch to de-energize the indicating circuit independently of the action of the shutter.

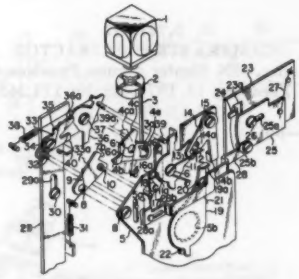


3,741,090

FLASHBULB TRIGGERING DEVICE FOR EE CAMERAS

Tadayuki Imai, Shinagawa-ku, Tokyo, and Hirokazu Kaneko, Ota-ku, Tokyo, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Oct. 6, 1971, Ser. No. 186,912
Claims priority, application Japan, Oct. 12, 1970, 45/101183
Int. Cl. G03b 15/04
U.S. Cl. 95—11.5 R 3 Claims



An exposure-meter-pointer pressure plate is displaced a small distance when the brightness of scene is sufficient to use an EE mechanism while the pressure plate is displaced a long distance when the brightness is not enough to use the EE mechanism. Control means at the leading end of a control lever which is displaced together with the pressure plate is adapted to control indirectly a member which triggers or releases a trigger pin of a flashbulb. The pressure plate and the control lever are displaced in response to the downward movement of a shutter release plate in such a manner that when the displacement of the control lever is small the trigger member will not be actuated while when the displacement is large, it is actuated.

3,741,091

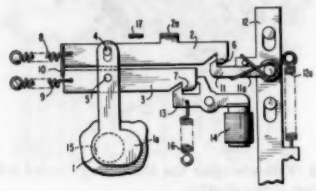
SINGLE BLADE ELECTRIC SHUTTER

Hiroshi Ohmura, Minato-ku, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 17, 1971, Ser. No. 209,045
Claims priority, application Japan, Dec. 17, 1970, 45/126324
Int. Cl. G03b 9/10
U.S. Cl. 95—59 6 Claims

A single blade electric shutter for opening and closing a camera aperture, comprising a first movable release lever, a

second movable release lever in parallel relation to the first lever, and springs for urging the release levers in a first direction. A shutter blade is pivotally connected to the first and second levers and is movable to an open position when the first lever is moved in the first direction relative to the second lever. A locking member is mounted on a movable release rod



and is adapted to engage the first lever to maintain it in a first position against the urging force of the spring. When the release rod is moved in a predetermined direction, the locking member is released from the first lever. A locking assembly is adapted to engage and disengage the second lever to control the shutter speed, and a time constant electric circuit is connected to the locking assembly to control its actuation.

3,741,092

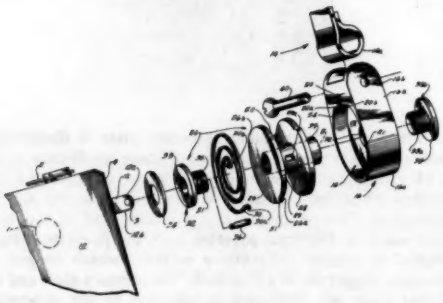
CAMERA STRAP RETRACTOR

August Bohanec, 44 N. Mentor Avenue, Pasadena, Calif.

Filed Aug. 12, 1971, Ser. No. 171,265

Int. Cl. G03b *17/56*

U.S. Cl. 95—86 **11 Claims**



A carrying strap accessory for a camera provides for automatic retraction of a flexible carrying strap. The accessory includes a pair of adapters each having a connector which mates with one of the conventional eye connectors provided as a standard feature on most existing camera housings. A pair of rigid strap connectors are attached to opposite ends of the flexible strap. Each strap connector is rotatable relative to an associated adapter about an axis defined by a boss projecting outwardly from the adapter and disposed in a receptacle in the strap connector. A spring bias mechanism connected between the adapter and the strap connector provides the driving force to retract the flexible strap. Stop means are provided to prevent rotation beyond a prefixed angle so that the strap does not spin around the camera case.

3,741,093

WET TYPE DEVELOPING APPARATUS

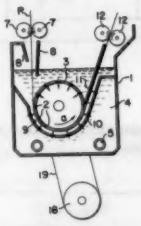
Shigehiro Komori, Kawasaki-shi; Akira Kurahashi, and Hiroyuki Hattori, both of Meguro-ku, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1970, Ser. No. 16,400

Claims priority, application Japan, Mar. 8, 1969, 44/21169; Mar. 8, 1969, 44/21170; Mar. 8, 1969, 44/21171

Int. Cl. G03d *3/12*

U.S. Cl. 95—89 R **6 Claims**



An improved wet type developing apparatus which can accurately and positively develop a sheet or roll of copying paper at a high speed. The apparatus is provided with means for guiding the copying paper disposed within a reservoir for developer and adapted to attract and hold the copying paper thereto to thereby guide the same so that the copying paper may have the latent image thereon developed by a stream of sufficiently stirred developer providing a high developing effect. Subsequently, the copying paper held by the guide means can be readily released by the loss of attraction in the guide means or forcedly taken off the guide means by the developer flowing out of the guide means, whereby the discharge of the developed paper can be effected simply and positively without any undesirable deformation formed in the copying paper.

3,741,094

FLASH PHOTOGRAPHY WARNING DEVICE

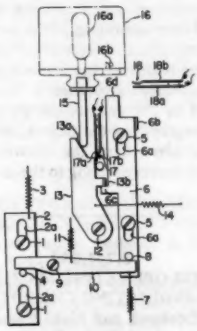
Hirokazu Kaneko, Ota-ku, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Ricoh, Japan

Filed Oct. 8, 1971, Ser. No. 187,611

Claims priority, application Japan, Oct. 14, 1970, 45/90201

Int. Cl. G03b *15/04, 17/20*

U.S. Cl. 95—11 L **8 Claims**



A main underexposure warning switch is connected in series between one pole of a power source and a warning lamp while a parallel-connected circuit of a auxiliary underexposure warning switch and a switch for indication of a mounted fired flashbulb is interconnected between the other pole of the power source and the warning lamp in such a manner that the

auxiliary underexposure warning switch may be normally closed when no flashbulb is mounted on a camera and opened when the flashbulb is mounted. Upon downward movement of a shutter release plate, the underexposure warning switch is not closed when the brightness of scene is sufficient to actuate and permit the use of an automatic exposure control device. When the brightness of scene is so dark that flash photography is required, and when a flashbulb is not mounted on the camera, the underexposure warning switch is closed to turn on the warning lamp. When a flashbulb which has been already fired is still mounted, the auxiliary underexposure warning switch is opened but the switch for indication of a fired flashbulb is closed to turn on the warning lamp.

3,741,095

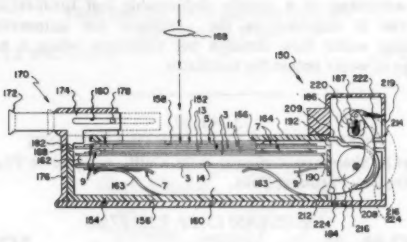
PHOTOGRAPHIC APPARATUS FOR HANDLING FILM UNITS OF THE SELF-PROCESSING TYPE

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 205,993, Dec. 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 111,467, Feb. 1, 1971, abandoned. This application Mar. 17, 1972, Ser. No. 235,699

Int. Cl. G03b *17/50*

U.S. Cl. 95—13 **26 Claims**



Photographic apparatus for exposing and handling film units of the self-processing type, and especially such film units that each include a resiliently flexible card for facilitating handling that includes the separation of waste materials from an image-recording portion of the unit after its processing has been initiated. The apparatus includes a pair of juxtaposed pressure-applying members, and various transporting mechanisms, for sequentially engaging and moving each film unit from an exposure position, through the pressure-applying members and to a deflecting element that separates the waste materials from the image-recording portion. The deflecting element effects movement of the waste materials in an arcuate path to a storage chamber, while the image-recording portion moves along a generally rectilinear path to a position accessible from the exterior of the apparatus.

3,741,096

FILM MAGAZINE

Harumi Tanaka, Ikuta-ku, Kobe-shi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan

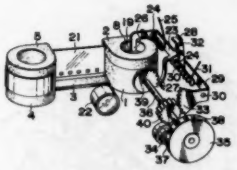
Filed Mar. 16, 1971, Ser. No. 124,873

Claims priority, application Japan, Mar. 16, 1970, 45/22535

Int. Cl. G03b *17/26*

U.S. Cl. 95—31 CA **7 Claims**

The main body of a film magazine for a camera is of uniform shape, the shape of a connecting member which is mounted detachably on the film magazine is variable in accordance with the sensitivity of the film charged in the film magazine. The film magaine is composed of a container body and a cover body and are retained together by the connecting member. An automatic exposure mechanism provided in a camera adapted to receive the film magazine is adjusted in accordance with the sensitivity of the film used by detecting the shape of the connecting member by a detecting member provided in the



camera. Mass-production of magazines is facilitated by fixing the shape of the main body of the film magazine regardless of the sensitivity of the film charged.

3,741,097

SLIDE-TYPE FILM TAKE-UP MECHANISM

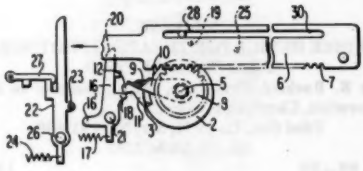
Susumu Fukuda, and Sho Takahama, both of Nishimomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

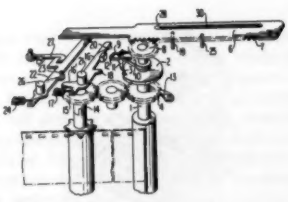
Filed Apr. 17, 1972, Ser. No. 244,689

Claims priority, application Japan, Apr. 15, 1971, 45/24074

Int. Cl. G03b *1/04*

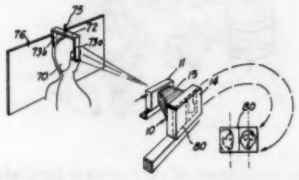
U.S. Cl. 95—31 AC **2 Claims**





A pinion is geared to an operating bar for film take-up and a locking pawl having a projection is fixed to the pinion for engagement with a step cam which is fixed to a film take-up shaft whereby sliding the operating bar in one direction will drive the film take-up shaft. A control lever having a projection is positioned to be rotated by engagement with the operating bar so that the projection thereof is positioned for engagement with the projection of the locking pawl to prevent a film take-up operation. A shutter lever is positioned to be rotated by engagement with the operating bar and then locked by a shutter release lever. The control lever may be reversely rotated to prevent engagement between the projection thereof and the projection of the locking pawl only by the rotation of the shutter lever by unlocking the shutter lever and the shutter release lever in a shutter release operation, so that the film will not be taken up even if the operating bar is slid into the camera body without a shutter release operation.

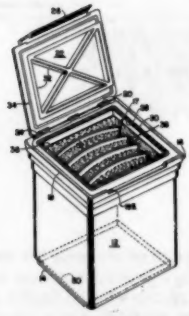
3,741,098
CAMERA SYSTEM
James L. Cannon, 578 South Enota N.E., Gainesville, Ga.
Filed May 11, 1971, Ser. No. 142,180
Int. Cl. G03b *19/02*
U.S. Cl. 95—37 5 Claims



A camera system in which two distinct photographs are produced in juxtaposition with respect to each other on a single frame from two successive images projected thereon. The camera structure includes a camera with a lens which is shiftable laterally between two positions. A nonactinic background is provided for the subject and means are provided for positioning the object in two distinct positions for successive exposures.

The second embodiment includes a camera in which the film carrier is shiftable laterally and a background for the object is provided, the background having outer panels of a nonactinic nature and a central panel which is actinic in nature. The subject is disposed before the actinic panel for successive photographs along the identical center line.

3,741,099
CONTAINER DEVICE FOR TREATING PHOTOGRAPHIC FILM WITH A LIQUID
William R. Buckley, Pembroke, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 22, 1971, Ser. No. 191,630
Int. Cl. G03d *3/00*
U.S. Cl. 95—98 12 Claims

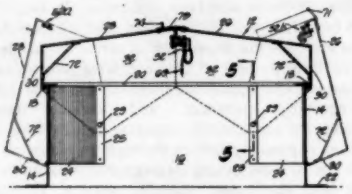


A liquid-tight container device for treating therein a plurality of photographic films with a liquid. The device includes a removable rack of novel structure in which the films can be so mounted that they will be held securely in spaced relation while the emulsion of each is protected against abrasion and subjected to a liquid treatment. The device is particularly adapted to process the already-developed-and-fixed negative component of so-called positive-negative film (e.g., Type 55 P/N film sold by Polaroid Corporation, Cambridge, Massachusetts, U.S.A.) after its separation from the positive component to clear residual developer from the emulsion.

3,741,100
BOAT VENTILATOR
David Walter Beck, 2257 Gaylord, Long Beach, Calif.
Filed Apr. 14, 1972, Ser. No. 243,988
Int. Cl. B63j *2/00*
U.S. Cl. 98—37 1 Claim

A boat ventilator having a forwardly-facing head member at its upper end for receiving air, and mounting means at its lower end for attachment to a boat deck. Baffles in the ventilator permit free flow of air into the boat but trap water for drainage to the exterior via drain holes. A combined baffle and waterstop of a readily deformable but form-retaining material is disposed in the ventilator for automatically blocking water flow through the ventilator when a heavy charge of water enters the ventilator.

3,741,101
GRAVITY OPERATED VENTILATOR UNIT
Albert S. Sheppard, Granada Hills, Calif., assignor to The Exitaire Co., Pacoima, Calif.
Filed Feb. 14, 1972, Ser. No. 226,143
Int. Cl. E05f *15/20*; F23l *17/02*
U.S. Cl. 98—86 3 Claims

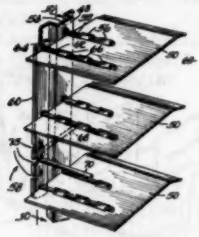


A gravity operated automatically opening ventilator unit which is easily installed in the roof of a building and which, at a predetermined temperature, will automatically open to vent smoke, gases and heat from the interior of the building to atmosphere.

3,741,102
VENTILATOR
Steven A. Kaiser, Milford, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.
Filed Sept. 28, 1970, Ser. No. 76,158
Int. Cl. F24f *13/08*
U.S. Cl. 98—110 3 Claims

A unit for ventilating an enclosure such as a poultry or livestock house is disclosed and claimed herein and includes a rectangular frame mountable within a framed opening in a wall of the enclosure for defining an air inlet opening. Negative pressure is created within the enclosure by suitable exhaust fans mounted therein and causes the flow of fresh air to

pass through the inlet opening. The direction of this fresh air is controlled by a plurality of elongated adjustable louvers

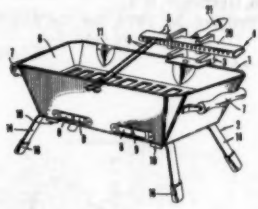


mounted to the frame, while a sliding door assembly independently controls the amount of air which passes through the inlet opening.

3,741,103
SIMPLE AND CONVENIENT ROASTER

Cheng-Hsuon Hwag, No. 469, Chung Hwa Road, Hsinchu, Taiwan, China

Filed Dec. 15, 1971, Ser. No. 208,079
Int. Cl. A47j *37/04*
U.S. Cl. 99—421 A **7 Claims**



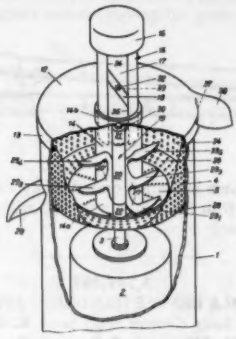
A device for cooking or roasting comprises an open topped fire box which is supported at its bottom on legs which are engaged into fastening plates at each end thereof. The opened top of the fire box is provided with a formation on at least one side defining a mounting base for a comb-shaped skewer holder. A skewer is held between fingers of the comb and it includes an end overlying and facing the fire box top with a plurality of openings for receiving skewer rods.

3,741,104
JUICE EXTRACTOR WITH AUTOMATIC PULP DISCHARGE

Hermann Kannegiesser, Tuttlingen, Germany, assignor to F. K. Wanger Ltd., Zurich, Switzerland

Filed Oct. 28, 1971, Ser. No. 193,248
Claims priority, application Switzerland, Nov. 10, 1970, 16648/70
Int. Cl. A23n *1/02*; A47j *19/02*; B30b *9/26*
U.S. Cl. 99—495 **5 Claims**

A juice extractor comprising a motor driven screen basket rotating about a vertical axis and having at its bottom a grating disc against which the material to be extracted is urged is provided with a pulp stripping mechanism provided with two sets of vertically disposed stripper segments which alternately engage the inner surface of the screen basket to strip the pulp therefrom in such a manner that the lowest stripper segment strips the pulp from the lower position of the screen basket and moves the pulp upwardly along said inner surface so as to be engaged by the next higher stripper segment until finally

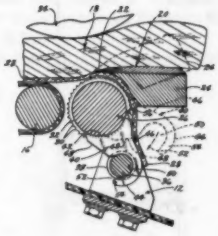


the highest stripper segment pushes the pulp over the upper edge of the screen basket and into a discharge spout.

3,741,105
STRIPPER MEANS FOR MEAT SKINNING MACHINES

Donald L. Beasley, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Sept. 3, 1971, Ser. No. 177,798
Int. Cl. A22c *17/12*
U.S. Cl. 99—589 **8 Claims**



A stripper means for meat skinning machines is disclosed herein. The machine includes a driven toothed roll which is rotatably mounted on a frame means adjacent one end of a feed table. A pressure shoe means extends around a portion of the driven roll and has a skinning blade extending therefrom for severing the skin from the meat product as the product is moved thereby. The driven roll is provided with a plurality of spaced apart annular grooves formed in the peripheral surface thereof. A stripping shaft is mounted on the frame means below the driven roll and has a plurality of plastic stripping blades detachably mounted thereon in a spaced apart relationship. Each of the stripper blades has a concave upper end portion which is received in the grooves of the driven roll. The stripping blades strip the severed skin from the driven roll and will break if an extremely strong piece of skin becomes entangled in the driven roll. The ability of the stripping blades to fracture insures that the expensive driven roll will not be damaged by the stripping blades.

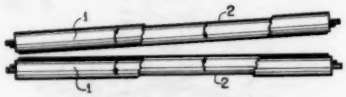
3,741,106
SYSTEM FOR HYDRATING DATES

David Reznik, Berkeley, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 778,165, Nov. 22, 1968, Pat. No. 3,625,707. This application Feb. 12, 1970, Ser. No. 14,878
Int. Cl. A23n *15/00*
U.S. Cl. 99—485 **1 Claim**

Apparatus and process are disclosed for hydrating dates in

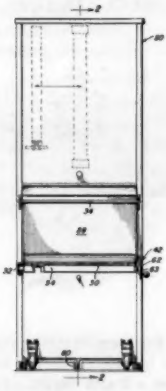
order to render them plump and tender. The system of the invention involves first a fissuring of the skin of the fruit, followed by a vacuum hydration operation by which the moisture content of the fruit is rapidly increased without alteration of its natural flavor.



3,741,107
PORTABLE REFUSE HANDLING APPARATUS

John A. Boyd, Falls Church, Va.; Scott R. Bond, Westmont, N.J.; Ralph K. Elliott, Clark Summit, Pa.; John J. Gisolfi, Scranton, Pa., and Eugene Merkin, Huntingdon Valley, Pa., assignors to Union Environmental Corporation, Philadelphia, Pa., by said Bond, Elliott, Gisolfi and Merkin

Filed Mar. 2, 1971, Ser. No. 120,296
Int. Cl. B30b *15/30*
U.S. Cl. 100—215 **53 Claims**



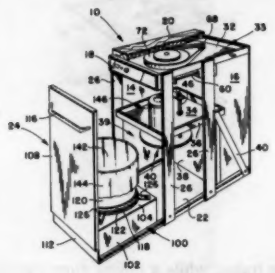
A portable refuse handling apparatus adapted for use with a refuse compaction machine of the type using a reciprocating ram to compress the refuse into packages. A dolly assembly is mounted in the compaction machine to define in combination with the machine a substantially enclosed compaction chamber. The dolly assembly comprises a base plate forming the bottom of the compaction chamber and a front panel secured to the base plate which forms at least a part of one of the side walls. A plurality of wheels are connected to the assembly and a handle frame is adapted to be removably mounted to the front panel.

3,741,108
TRASH COMPACTOR

Jerome F. Stratman, Cypress, and John Novak, Anaheim, both of Calif., assignors to The Tappan Company, Mansfield, Ohio

Filed Feb. 3, 1971, Ser. No. 112,138
Int. Cl. B30b *15/06*
U.S. Cl. 100—229 A **11 Claims**

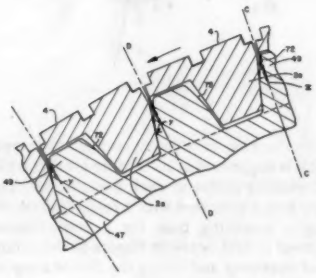
A resiliently mounted refuse receptacle adapted to be selectively moved between a closed and an open position with respect to a trash compactor unit housing, the receptacle in its closed position receiving a ram therein to compact the contained refuse to a fraction of its initial volume, such ram urging the receptacle into supportive engagement with a portion of the housing during its compaction stroke.



3,741,109
TYPE CARRIER ASSEMBLY

Wilfred Y. Benson, Natick, and James T. Andrews, West Peabody, both of Mass., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,731
Int. Cl. B41j *1/02, 1/20*
U.S. Cl. 101—93 C **4 Claims**

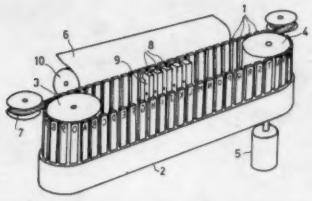


An assembly for moving a train of print slugs having type characters thereon in a continuous path and along the print line of a high speed, on-the-fly, impact printer. Each print slug has a single tooth and the slugs are driven by a gear whose teeth mesh with the teeth of the slugs. The slugs are guided along their path in a track which slidably engages top and bottom portions of the slugs. The tooth of each slug is located between its top and bottom portions and the gear engages the slugs' teeth at locations equidistant from where the track engages the slugs so that a vertical overturning moment is not imparted to the slugs by the gear. Additionally, the type characters are centrally located between the slugs' top and bottom portions so that impact of the printer's hammers at the print line does not produce vertical overturning moments on the slugs. Further, the slugs abut as they travel around the gear and remain in abuttment throughout their entire path so that adjacent slugs always move at the same velocity and a stable train is provided.

3,741,110
HIGH SPEED ON-THE-FLY PRINTER PROVIDING ARRESTING OF THE TYPE CHARACTERS IN THE PRINTING POSITIONS

Oscar Bossi, Milan,,Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Apr. 7, 1971, Ser. No. 132,011
Claims priority, application Italy, Apr. 7, 1970, 22973 A/70
Int. Cl. B41j *1/20*
U.S. Cl. 101—93 C 7 Claims

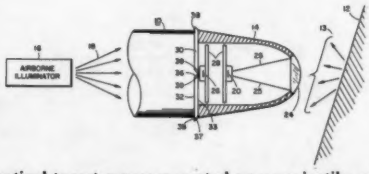


A high-speed on-the-fly impact printer effecting printing by impelling moving type characters to strike against a print-receiving member, wherein print smearing is suppressed by momentarily reducing the speed of the type character transverse to the print receiving member at the moment of impact with said member.

3,741,111
OPTICAL TARGET SENSOR

Charles Herbert Brenner, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 19, 1971, Ser. No. 126,232
Int. Cl. F42c *13/02, 11/06, 15/40*
U.S. Cl. 102—70.2 P 8 Claims



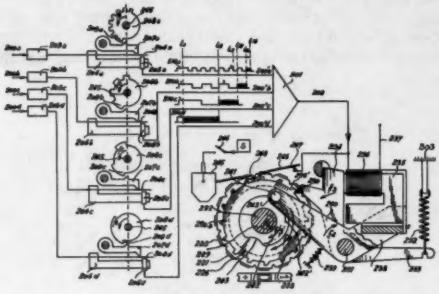
An optical target sensor mounted on a projectile, produces a fuzing signal when two light sensitive devices which are mounted on the projectile sense light pulses which are separated by a fixed time interval. One of the light sensors is mounted to be exposed to light pulses which are projected towards and beyond the projectile by an illuminator. The other light sensor is mounted to be exposed to the illuminator light which is reflected from the general target area. The range at which a fuzing signal occurs is controlled by setting the time difference required between the two pulses. No radiation occurs from the target sensor because it receives its signals as a result of radiation from the illuminator. The light projector or illuminator may comprise a pulsed laser.

3,741,112
UNIT FOR TRANSLATING AND PRINTING OF DATA SUPPLIED IN A FORM OF COMBINATIONS OF BINARY SIGNALS

Yves Cayla, Pontchartrain, France, assignor to Societe d'Etudes et de Documentation Electronique, (SEDELEC), Hauts de Seine, France

Continuation-in-part of Ser. No. 849,044, Aug. 11, 1969, abandoned. This application May 11, 1972, Ser. No. 252,304
Int. Cl. B41j *1/60*
U.S. Cl. 101—93 C 13 Claims

This disclosure relates to a unit for translating and printing data supplied as combinations of binary signals delivered respectively on different lines of a group of conductors. The signals are split up on each line into trains of pulses whose durations double from one line to another in geometric progression. Printing means are provided with a plurality of printing characters. Collector means (having the group of conductors

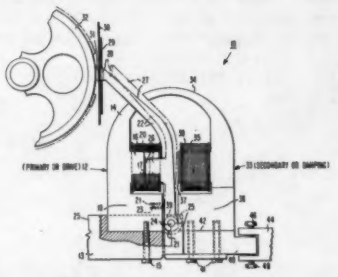


coupled thereto) combine the pulses into a joined configuration. Clutching means are connected to an output line of a collector means for clutching the printing means to a rotatable drive shaft so as to position the printing characters in juxtaposed relation with an article to be printed.

3,741,113
HIGH ENERGY PRINT HAMMER UNIT WITH FAST SETTLE-OUT

John Mako, Vestal, and Joseph E. Wallace, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 25, 1971, Ser. No. 156,779
Int. Cl. B41j *9/10*
U.S. Cl. 101—93 8 Claims



A print hammer actuator comprises a main three-legged magnetic core having an operating winding on a middle or center leg, and an armature pivotally supported adjacent the lower leg with an extension at the other end providing a hammer face, and a projection opposite the middle leg which moves within the operating winding. A secondary magnetic core on the opposite side of the armature with a restore and damping winding operates to damp oscillations and improve settle-out.

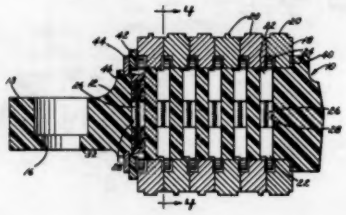
3,741,114
DETENT MEANS FOR SETTABLE PRINT WHEELS

John A. Maul, Lyndhurst, and David D. Anderson, Richmond Heights, both of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 777,616, Dec. 21, 1968, abandoned. This application Feb. 26, 1971, Ser. No. 119,283
Int. Cl. B41j *1/54*
U.S. Cl. 101—110 4 Claims

A print wheel assembly is disclosed having a print wheel rotatably disposed on a shaft for rotational movement to a

print position. The print wheel includes an annular serrated portion having a plurality of clockwise faces and a plurality of counterclockwise faces, and detent means are provided for engaging the serrated portions to provide a locating action. The parts are so arranged that when a wheel settles in a detented position, a first detent means is spaced away from each of the counterclockwise faces and acts against one of the clockwise faces for exerting a first positive torque on the print wheel to urge the same in a clockwise direction, and a second



detent means is spaced away from each of the clockwise faces and engages one of the counterclockwise faces for exerting a second positive torque on the print wheel substantially equal in magnitude but opposite in direction to the first torque. In a first embodiment, the serrated portion is an internally serrated portion of the print wheel. In a second embodiment, the serrated portion is an externally serrated portion of the print wheel. A T-shaped mounting bracket is formed to a crosspiece integral with the shaft and includes three mounting portions for attaching the assembly to a machine frame.

3,741,115

METHOD OF AND APPARATUS FOR CONTROLLING LITHOGRAPHIC PRINTING

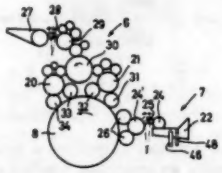
Leo Keller, Sandackerstrasse 38, Stuttgart, Germany

Continuation-in-part of Ser. No. 753,504, Aug. 19, 1968, abandoned. This application Oct. 26, 1970, Ser. No. 84,098

Claims priority, application Germany, Oct. 24, 1969, P 19 53 590.1; Aug. 21, 1967, K 63149

Int. Cl. B41f *25/00*; B41f *31/00*

U.S. Cl. 101—148 **17 Claims**



In a printing machine, means are provided to independently control the temperature of the wetting agent and also the temperature of the printing ink at least at two spaced locations in the inking unit.

3,741,116

VACUUM BELT

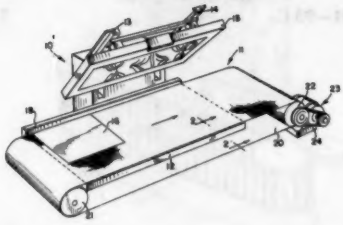
Melvin E. Green, Claude H. Oltra, both of Chicago, and Henry J. Bubley, Deerfield, all of Ill., assignors to American Screen Process Equipment Company, Chicago, Ill.

Filed June 25, 1970, Ser. No. 49,828

Int. Cl. B41f *1/00*; B65r *29/24*

U.S. Cl. 101—287 **9 Claims**

An improved conveying means for feeding and removing sheet stock to and from a selected area for printing or the like. The conveying means is inexpensively formed from an endless belt of monofilament polyester mesh which moves across a vacuum base disposed beneath a printing head. The mesh functions as a conveying means and is supported by the vacuum base during printing. The mesh size is fine enough to permit the printing of high quality thin paper stock without discernible mesh marks appearing after printing is complete. Vacuum is applied to the underside of the stock to be printed through the mesh from a known type of vacuum base with sufficient force generated to hold the sheet stock properly posi-



tioned during printing and feeding. The mesh is of the order to from about 140 to 300 threads per inch. In another embodiment of the invention, the vacuum belt principle is shown in another form wherein it functions as a take-off conveyor which functions to assist in holding the stock during printing. A small manifold function as a belt guide and is all that is required to pull the stock onto the conveyor.

3,741,117

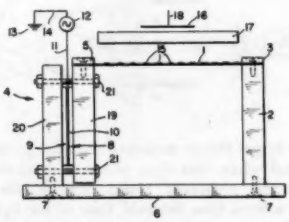
PRESSURELESS NON-CONTACT ELECTROSTATIC PRINTING

Walter B. Bienert, and Donald S. Trimmer, both of Baltimore, Md., assignors to Sinclair & Valentine Company, Inc., New York, N.Y.

Filed July 10, 1970, Ser. No. 53,944

Int. Cl. B41m *5/00*

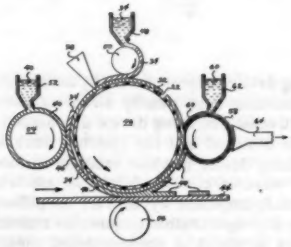
U.S. Cl. 101—426 **13 Claims**



A pre-determined, non-random electrostatic image is formed and developed on a thin, flexible plate about 0.0005 inch to about 0.050 inch thick. A substrate to be printed is positioned facing but spaced apart from this pre-formed image of particles, and an electrostatic field is established therebetween. The field is of insufficient strength to dislodge the image of particles from the thin plate, but of sufficient strength to transfer the image to the substrate once it is dislodged from said thin plate. The additional force required to dislodge the particles is supplied by imparting ultrasonic flexual shock waves to the thin plate. The dislodging effect of the shock waves is enhanced by exciting the vibratory system at a resonance frequency of said system. The electrostatic attraction between the image of particles and the thin plate serves to minimize any tendency for relative lateral movement of the particles upon application of the ultrasonic shock waves, thereby causing the particles to be propelled directly outward from the thin plate in their desired image configuration and permitting the reproduction of the image with superior clarity and sharpness on the spaced-apart substrate. By sweeping the driving frequency through a range including a resonance frequency of the vibratory system, several distinct resonances of the thin plate will be effected, thereby superim-

posing several nodal patterns on said thin plate so as to minimize variations in the particle intensity of the reproduced image and further enhancing the quality of said image. For continuous operations, the thin plate is conveniently employed in the form of a rotatably mounted continuous belt, with a cleaning station, a charging station, a development station, and an image-transfer station positioned along the path of rotation. A metallic belt may be employed with a non-conductive image formed thereon by coating the plate with a light sensitive photo-resist material, exposing the coating to light through a negative of the desired image and developing the thus exposed image by dissolving the unexposed, non-image areas with an organic solvent. The flexual waves may be generated in the thin plate by a piezoelectric crystal system. When the thin plate is used in the form of a continuous belt, the piezoelectric crystal system may conveniently be affixed or otherwise connected to one of the belt-supporting rollers. The piezoelectric crystals may also be incorporated as an integral part of such a roller for greater convenience and control in continuous printing operations. Excitation of the crystal system can occur nearly instantaneously when the printing gap is less than about one-eighth inch. At about three-sixteenth inch or more, the amplitude of the excitation signal may be increased slowly, and the driving frequency may be swept slowly to limit the instantaneous toner current in the gap and avoid mutual repulsion of particles and some distortion of the reproduced image.

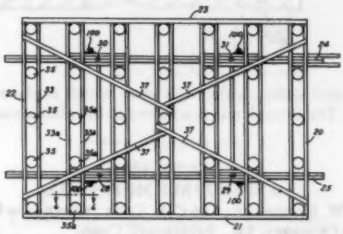
3,741,118
METHOD FOR ELECTRONIC LITHOGRAPHY
Adam L. Carley, 45 Linnaean Street, Cambridge, Mass.
Filed June 17, 1970, Ser. No. 46,935
Int. Cl. B41n *3/08*; **B05c** *9/00*; **B41l** *25/00*
U.S. Cl. 101—451 **25 Claims**



A method and apparatus for printing an image in scanned electronic form on an ink receiving surface using ordinary printer's ink. The method and apparatus employ quasilithographic techniques and equipment, but unlike conventional lithography, the method does not require the preparation, prior to the printing process, of a lithographic plate containing in permanent form the image to be printed. The scanned electronic image is used to form a fountain solution image on a lithographically blank plate by the selective deposition and/or removal of the fountain solution from the plate. Lithographic ink is applied to the fountain solution imaged plate and then transferred to an ink receiving surface, such as paper or an offset blanket. Thereafter, the lithographically blank plate is cleaned and ready for the formation of the same or a different fountain solution image.

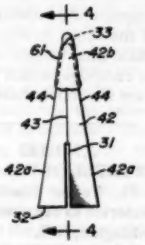
3,741,119
REMOTE ROCK BREAKING METHOD APPARATUS THEREFOR
Robert E. Eckels, 2101 Youngfield, Golden, Colo.
Filed Feb. 22, 1971, Ser. No. 117,537
Int. Cl. F42d *1/02, 3/00*
U.S. Cl. 102—23 **12 Claims**

A method of remotely breaking rock, or the making of predetermined size holes in the earth, in a precise position, suspends an assembly of prepositioned shaped charges in a pendulum array between a distance line of sight signal generator and receiver for such signal for accuately positioning the charges in a predetermined location. The pendulum array may be precisely laterally aligned along the predetermined line, and longitudinally along the line in accordance with predetermined mappings. The method provides a means of explosively



forming trenches along the bottom of bodies of deep water, the precision breaking of underwater rocky barriers, etc., using an optimum spacial arrangement of a plurality of charges. The spacial arrangement being determined by testing on similar rock. The apparatus for such method includes articulated sinking rafts supporting such spacially arranged charges which are arranged for lateral and longitudinal leveling.

3,741,120
IGNITER
Jack G. McAllister, Phoenix, Ariz., assignor to Centuri Engineering Company, Inc., Phoenix, Ariz.
Filed Mar. 23, 1970, Ser. No. 21,599
Int. Cl. F42b *15/00*; **C06d** *1/04*
U.S. Cl. 102—34 **4 Claims**

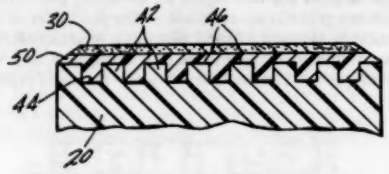


A device specially adapted for igniting model rocket engines which includes a thin wedge-shaped paper or deformable plastic substrate, a thin electrically conductive metal foil on one side of the substrate and a pyrotechnic igniting bead carried on the tip end of the wedge-shaped device. A slit extends from the base of the wedge to a point spaced from the tip end, dividing the foil into two conductor portions which join at the tip end to form a resistance heating portion in thermal contact with the pyrotechnic igniting bead.

3,741,121
FUSEE COVER
John A. Miller, Herrin, Ill., assignor to Olin Corporation, New Haven, Conn.
Filed Sept. 3, 1971, Ser. No. 177,610
Int. Cl. C06d *1/10*
U.S. Cl. 102—37.8 **6 Claims**

A fusee cover having a scratch mix adhered thereto. The

cover is provided with a plurality of spaced parallel rows of



spaced upstanding projections upon which is placed a plastic coating. The scratch mix is adhered to the plastic coating.

3,741,122

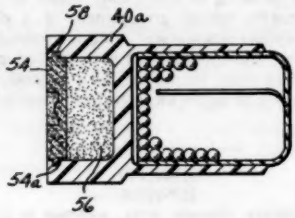
EXPENDABLE SHOTSHELL

Martin W. Kordas, Jr., Cos Cob, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Aug. 27, 1968, Ser. No. 755,649

Int. Cl. F42b 7/06

U.S. Cl. 102—43 P **1 Claim**



An expandable cartridge made of thermoplastic material which is adapted to contain the necessary propellant, projectile charge, etc., and which is explosively expelled from the gun along with the projectile charge. There are several modifications of the invention, each of which requires some means to slit, fracture, or rupture the outermost cartridge structure, which then permits the inner structure to be released thus facilitating the ultimate final release of the projectile charge from the expendable cartridge, which then falls to the ground much like conventional shot containers.

3,741,123

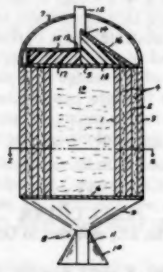
MULTI-CYLINDER SHELL OF FRAGMENTIZED METAL

Walter H. Dittrich, Ft. Walton Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 29, 1968, Ser. No. 749,522

Int. Cl. F42b 13/48

U.S. Cl. 102—67 **3 Claims**



The improved shell employs two or more cylinders of metal which had been grooved in criss-cross directions and are spaced apart, and having a sheet of explosive material in between the cylinders. The innermost cylinder is filled with a high explosive which consitutes the main charge. The latter may have a "square" end or may be recessed to constitute a shaped charge having a metal liner. An impact detonator initiates an explosion in the sheet material which causes shock waves, some of which pass directly through the inner fragmentized cylinder and others are reflected by the outer cylinder. But all the shock waves meet at the axis of the main charge to provide a tremendous stimulus to initiate the main explosion. Thus the energy of the main explosive is increased and this energy increment causes the cylinders to break up into small fragments which spread outwardly with accelerated speed to enhance the damage potential.

3,741,124

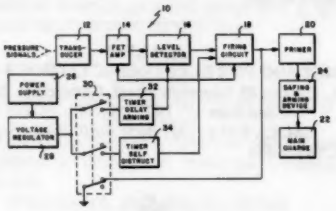
DEMOLITION FIRING DEVICE

Francis A. Visk, Beltsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 11, 1971, Ser. No. 143,679

Int. Cl. F42c 11/02, 9/16

U.S. Cl. 102—70.2 R **8 Claims**



A firing device is sympathetically activated by the pressure wave generated by a nearby air or underwater explosion. When activated, the firing device detonates a main charge to wich it is attached and the resultant sock wave initiates a similar firing device in chain reaction fashion. An incoming pressure wave is converted into an electrical signal by a hydrophone, amplified by an FET amplifier, and level detected by a programmable unijunction transistor. If the pressure wave is above a predetermined amplitude, the programmable unijunction transistor conducts, causing an SCR to become conductive. This allows a firing capacitor to discharge through an explosive primer, which in turn detonates a main charge. The firing device also includes delay arming circuitry and self-destruct circuitry.

3,741,125

STABILIZED ROCKET HEAD

Andre' E. La Pointe, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

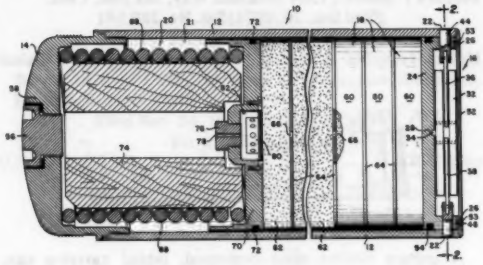
Filed Nov. 22, 1960, Ser. No. 71,107

Int. Cl. F42b 13/28, 13/42

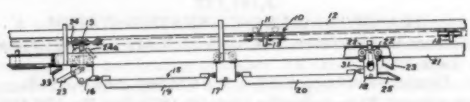
U.S. Cl. 102—49.4 **15 Claims**

1. A rocket head for attachment to a spin stabilized rocket motor, said rocket head comprising, a body tube, means at the rearward end of said tube for closing said body tube and adapted for attachment to a rocket motor, a removable tube closure assembly attached to the forward end of said body tube means actuated by rotation of the rocket head for releasing said removable tube closure, a plurality of packages of loosely packed radar reflective material removably contained within said body tube; and ejection means within the tube

body for ejecting said packages one at a time with a time delay therebetween upon removal from said body tube of said removable tube closure assembly from the forward end of the body tube.



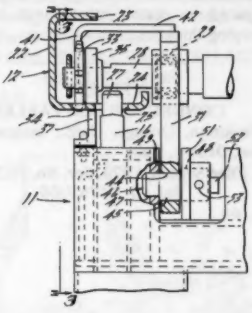
3,741,126
SUSPENDED CONVEYOR SYSTEM
Ivan L. Ross, Birmingham, Mich., assignor to American Chain & Cable Company, Inc., New York, N.Y.
Filed Mar. 18, 1971, Ser. No. 125,501
Int. Cl. B61b *3/00*; B61j *1/12*; B61g *17/42*
U.S. Cl. 104—96 **18 Claims**



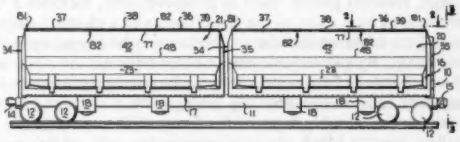
A suspended conveyor system including a first load supporting track and a second load supporting track with an intermediate transfer portion. A powered conveyor is provided in association with each of the first and second tracks. A plurality of carriers are provided. Each of the carriers has a first pusher dog that is in position for normal engagement with the pusher member of the conveyor and a second pusher dog mounted for movement between an operative carrier pushing position and an inoperative position. At a transfer point, a first cam engages the second dog to move the second dog to operative carrier transferring position. Means are provided for releasably holding the second dog in operative carrier transferring position. Beyond the transfer point, a second cam engages the second dog to move the dog downwardly out of operative position.

3,741,127
TROLLEY SYSTEM FOR FREIGHT BRACING BULKHEAD ASSEMBLIES
Gerald H. Williams, Detroit, Mich., assignor to Evans Products Company, Plymouth, Mich.
Filed Sept. 1, 1971, Ser. No. 176,973
Int. Cl. B60p *7/14*
U.S. Cl. 105—376 **5 Claims**

Two embodiments of freight bracing bulkhead assemblies incorporating improved trolley structures for supporting the bulkhead assemblies for movement along a cargo area and for precluding disengagement of the trolley assembly from the supporting crane rails and for precluding falling of the bulkhead assemblies from these crane rails. In each embodiment the trolley structure includes roller means that supportingly engage a pair of spaced overhead tracks and which are disposed outwardly of the locking pins at the corresponding sides of the bulkhead. The overhead tracks have a generally C-shape and the roller supporting means includes a member that extends in close proximity to the uppermost track leg to preclude inadvertent displacement of the trolley structure relative to the track.

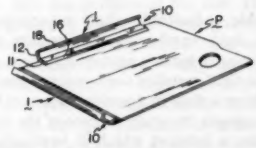


3,741,128
DUMP CAR AND COVER COMBINATION
Fred Fort Flowers, P. O. Box 238, Findlay, Ohio
Filed Jan. 6, 1971, Ser. No. 104,318
Int. Cl. B61d *39/00*
U.S. Cl. 105—377 **22 Claims**



This disclosure relates to a railroad dump car cover having opposite side and end walls and a top wall in the form of at least one pair of cover doors mounted adjacent upper edges of the side walls for pivotal movement about a longitudinal axis, and a pair of longitudinally extending plates secured to each other and to each of the side wall lower edges exteriorly thereof for performing the dual functions of imparting rigidity to the side walls and providing a walkway for workmen. Novel means are provided for aligning the cover with a dump car body and removably securing the same thereto for readily converting the dump car as necessary depending upon the particular material being hauled. The cover is particularly adapted for use with side-dumping railroad cars, and novel seal means are provided between the side dump doors of the railroad car body and the side walls of the cover, along with appropriate seals about the periphery of the top cover doors to prevent debris from being scattered while the car is in transit.

3,741,129
ATTACHMENT DEVICE
Paul Suvada, 2820 East 122nd St., Cleveland, Ohio
Filed Apr. 14, 1972, Ser. No. 244,135
Int. Cl. A47b *23/00*
U.S. Cl. 108—43 **10 Claims**



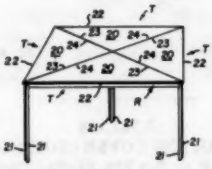
The disclosure describes a removable attachment device for storing the artist's unmixed pigments on his palette. The device comprises a tray for holding the pigments and a resilient, removable clip which removably retains the tray on

the palette and is mounted in a forwardly open, depending channel on the underside of the tray. The clip and tray are mutually configured to permit attachment of the device to palettes of varying thickness.

3,741,130
CONNECTOR FOR TABLES

David E. Workman, Orange, Calif., assignor to Samsonite Corporation, Denver, Colo.

Filed Sept. 8, 1970, Ser. No. 70,382
Int. Cl. A47b 7/00
U.S. Cl. 108—64 6 Claims

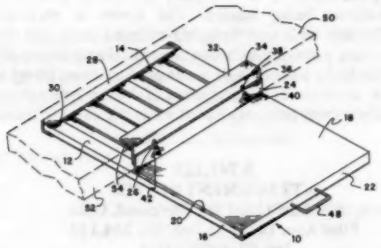


A connector for use with segment tables and formed of tough, resilient plastic, such as polypropylene, includes a tab pivoted, as by a rivet, to the lower flange of a channel-shaped rail of the table, so that the connector may be stored upon the rail flange. By a transverse plastic hinge adjacent the pivot tab, the remainder of the connector may be swung underneath the adjacent rails of two abutting tables, with a hook at the opposite end releasably engaged the flange of the opposite rail. A hollow spacing block extends between the rails, while an opposite tab is used for placement and removal of the hook.

3,741,131
SHELF EXTENDER

Orren R. Leadbetter, 6620 Ludwig Circle, Fort Wayne, Ind.

Filed Feb. 18, 1971, Ser. No. 116,406
Int. Cl. A47b 96/02
U.S. Cl. 108—97 1 Claim



A detachable, adjustable shelf extension comprising a generally flat, rigid member having opposite ends and an upwardly facing planar surface portion adjacent one of the ends. Secured to the rigid member are hanger means for suspending the member from a shelf in a position wherein the other end of the member engages the undersurface of the shelf. The hanger means includes a bracket which is vertically movable with respect to the rigid member and has a flange portion which overlies an edge portion of the shelf, and clamp means for locking the bracket in a position wherein the flange portion is in predetermined spaced-apart relationship to the rigid member.

3,741,132
STRONG BOX AND FIXED ANCHORAGE AND MEANS FOR INTERCONNECTING AND LOCKING THEM TOGETHER

Bernard F. Blower, 1384 Heckman Way, San Jose, Calif.

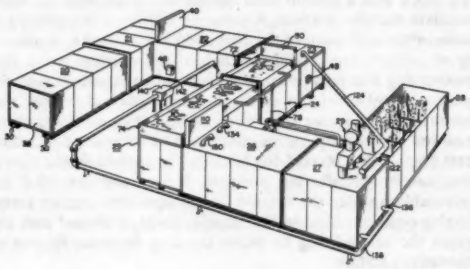
Filed Dec. 20, 1971, Ser. No. 209,641
Int. Cl. E05g 1/04
U.S. Cl. 109—52 4 Claims

A unitary bodied open bottomed, lidded carrying case nestable in a fixed base pan for confining the lid and open bottom of such case within such pan in combination with a means on one end of the case for engaging one end of the pan thereto opposite the other end of the case having a lock operated latching means spring urged into latched engagement with a keeper bolt projecting upwardly from and integrally of the pan. A lock confining chamber provided in such other end of the case including a latching lever spring urged toward a lock chassis confined in the chamber and movable by a key operated slide bolt out of latched engagement with the keeper bolt of the fixed base pan.

3,741,133
TRANSPORTABLE INCINERATION SYSTEM

Clarence R. Kleinfelter, 394 South McHenry Avenue, Crystal Lake, Ill.

Continuation-in-part of Ser. No. 873,966, Nov. 4, 1969, abandoned. This application Sept. 10, 1971, Ser. No. 179,488
Int. Cl. F23g 7/00
U.S. Cl. 110—8 A 16 Claims



A portable incineration system is provided in which transportable modular units are interconnected to provide a large scale incineration system. The fly ash and other undesired particles are removed from the hot gases without developing a steam plume by reheating and drying these gases prior to exhaust.

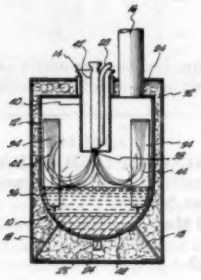
The hot water produced during fly ash removal is circulated through a suitable cooler, or used as a constant heat source, and the cooled water is recirculated. Cleaning action is improved by injecting chemical sprays into the final drying chamber which solidify certain vapors in the exhaust stream.

In the primary burning chamber the formation of large clinkers between the sides of the stoker and the refractory walls is avoided by providing a relatively wide, deep ledge of refractory material adjacent the moving edges of the stoker.

In another embodiment a series of hollow perforated cylinders, arranged in a gradually sloping or vertically stepped array, may also be used as a stoker grate in the primary burning chamber to transport the material being burned through this chamber. The exhaust hot gases may be mixed with oxygen

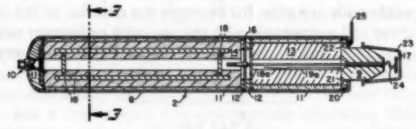
and supplied to the interior of these cylinders to prevent clogging and to assist in combustion of the material on the primary chamber.

3,741,134
WASTE INCENERATION SYSTEM
George C. Roberts, Venice, and Donald A. Dotson, Redondo Beach, both of Calif., assignors to Monogram Industries, Inc., Los Angeles, Calif.
Filed Nov. 26, 1971, Ser. No. 202,234
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 R 20 Claims



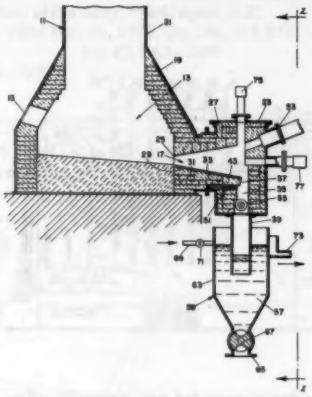
A waste incineration system is disclosed which employs a relatively large flame volume in the burner which substantially occupies the combustion chamber. All vapors and entrained gaseous products spend a relatively long time in contact with the flame. A thermally controlled fuel valve remains open so long as a minimum temperature differential exists between the exhaust flue temperature and the temperature of the container near the base. Initially, the liquid portion of the waste material is vaporized from the surface and the remaining solid waste is burned to ash.

3,741,135
CUTTING TORCH
James C. Thompson, Santa Clara, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 15, 1971, Ser. No. 180,601
Int. Cl. F23c *1/00*
U.S. Cl. 110—22 R 6 Claims



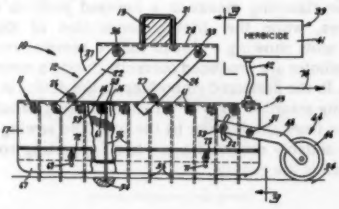
A method for cutting metal is disclosed in which a fuel and an oxidizer are burned within a combustion chamber at higher than ambient pressures to produce a gas stream comprising an oxidizer-rich core surrounded by a fuel-rich sheath. This gas stream is caused to impinge upon a body of metal to be cut at approximately sonic velocities by passing the gas stream through a choked nozzle arranged with respect to the combustion chamber so that the oxidizer-fuel orientation in the gas stream is maintained. Portable hand-held apparatus for generating the cutting gas stream are disclosed which employ a solid fuel material and a solid oxygen generating material to produce a portable self-contained unit.

3,741,136
TAP SYSTEM FOR MOLTEN MATERIALS
Kenneth W. Stookey, Markle, Ind., assignor to Torrax Systems, Inc., North Tonawanda, N.Y.
Filed Sept. 17, 1971, Ser. No. 181,457
Int. Cl. F23j *1/00*
U.S. Cl. 110—165 R 4 Claims



A continuous tap system for molten materials issuing from the well of a vertical shaft incinerator operating under positive pressure includes a conduit which is formed from refractory material and further includes a means for cooling the refractory material to control the corrosion of the refractory material caused by flowing molten material.

3,741,137
INCORPORATOR
Fred W. Eisenhardt, Fargo, N. Dak., assignor to Alloway Manufacturing Inc., Fargo, N. Dak.
Filed Nov. 19, 1971, Ser. No. 200,431
Int. Cl. A01c *23/02*
U.S. Cl. 111—6 21 Claims

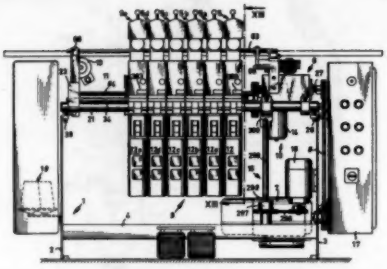


A ground working implement operable to mix liquid or granular materials, as fertilizers, herbicides and like agricultural chemicals, into the surface of the soil. The implement has an inverted, generally U-shaped housing carrying a plurality of spring biased earth working members, as spring teeth. In one form, parallel linkage means pivotally mounts the housing on a support. Wheel structure connected with arms to the housing is used to adjust the earth working depth of the teeth. In another form, an upright standard and clamp adjustably mounts the housing on a tool bar to adjust the earth working depth of the teeth. The material is discharged through a nozzle mounted on the front of the housing whereby the implement, as it moves in a forward direction, discharges the material onto the soil. The material is worked into the soil with the teeth.

3,741,138
SEWING EQUIPMENT FOR SIMULTANEOUSLY SEWING A PLURALITY OF BUTTONHOLES

Alfred Heimann, Sennel, and Wolfgang Sugland, Herford, both of Germany, assignors to Kock Adler AG, Bielefeld, Germany

Filed Mar. 26, 1971, Ser. No. 128,249
Int. Cl. D05b *3/06, 69/36*
U.S. Cl. 112—67 **42 Claims**



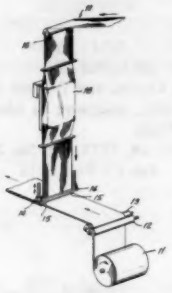
A sewing device provided with a plurality of spaced zig-zag sewing machine units, wherein each of the units includes a reciprocating needle, controlling devices for the lateral movements of the needle bar carrying the needle, for the stitch field position, workpiece clamping and moving elements for displacement of the workpiece during the sewing process for the purpose of simultaneously sewing a number of stitch forms, especially buttonholes in a workpiece, and with a separately arranged gearing which is driven by a stop electromotor and having a main driven shaft for driving the sewing machine units, two additional driving shafts for controlling the lateral movements of the needle bars and the movements of the workpiece clamping elements for each of the sewing machine units. The sewing device is further provided with thread break detection devices for supervising the threads of each of the sewing machine units whereby, after ascertaining a thread failure in one or more sewing machine units after termination of the sewing cycle, those sewing machine units will be uncoupled from their driving and will remain together with the workpiece clamping means in a lowered position upon the workpieces, while the driving connection of the sewing machine units showing a thread failure remains coupled till the buttonholes are produced correctly during a renewed sewing cycle. In the preferred embodiment, the device is provided with sewing machine units in which the needle penetrates the workpiece from the bottom to the top. The sewing machine units are slidably mounted upon two supporting rods which are secured in the gearing.

3,741,139
CONTROL ARRANGEMENT FOR CONSTANT-RATE-YARN-DELIVERY CARPET TUFTING MACHINES

Zane Frentress, Greenville, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Oct. 1, 1971, Ser. No. 185,689
Int. Cl. D05c *15/00*
U.S. Cl. 112—79 A **16 Claims**

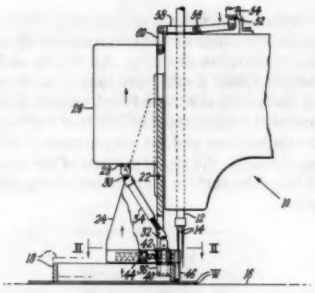
A control system designed for use in a carpet-tufting machine in which a row of tufts is formed in each cyclical operation of the machine. Each tuft in each row receives yarn from an individual yarn-delivery device, and the control system regulates these devices so that (1) the height of the tufts may be varied both within a row, and from row to row, and (2) the yarns that form the tufts are delivered at a substantially constant rate. The control system starts, advances, and turns off the yarn-delivery devices in accordance with a pre-programmed instruction which identifies the devices to be so operated by group, and number within each group, and thus effects a very rapid operation of the machine.



3,741,140
PATTERN CONTROLLED FEED MECHANISM

William B. Mercaldi, Beverly, Mass., assignor to USM Corporation, Boston, Mass.

Filed Mar. 27, 1972, Ser. No. 238,034
Int. Cl. D05c *3/02*
U.S. Cl. 112—102 **9 Claims**



For stitching along a curve and/or rectilinearly a sewing machine (or the like) includes in its bed, in lieu of conventional feed dog mechanism or the like, a cam of desired interchangeable pattern serving also as a work hold-down, and feed mechanism for progressing the work and cam relative to the operating zone of a conventionally reciprocable needle. The feed mechanism desirably comprises a pair of idler rolls engageable with one side, for example the exterior of the cam, and a drive roll engageable with the opposite or interior side of the cam and biased toward the idler rolls substantially between them.

3,741,141
TAB ELEMENT

Hans H. Diekhoff, Greensburg, and Howard D. Schrecker, Hyde Park, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

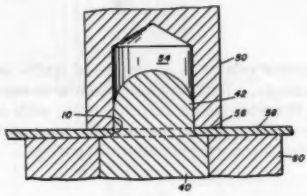
Division of Ser. No. 20,705, March 18, 1970, Pat. No. 3,659,740. This application Sept. 20, 1971, Ser. No. 181,807
Int. Cl. B21d *51/26*
U.S. Cl. 113—1 F **5 Claims**

Apparatus for fabricating a tab element having an opening for joinder to a container wall including a female die having an elongated recess and an outwardly disposed annular tab engaging surface. A male die having an upwardly directed boss and a surrounding annular tab supporting surface. The male die having a concave transverse wall connecting the die boss with the annular tab supporting surface. Aligning the tab

opening with the die elements and establishing relative closing movement between the dies produces compressive reforming of the opening defining portion of the tab element to provide a convexly curved portion corresponding in curvature to the male die concave transverse wall.

A method of reforming an opening defining wall in a tab element to provide a continuous wall which diverges from the upper tab surface to the lower tab surface by compressively reforming the continuous wall.

A container wall having a removable sector with a tab element secured thereto by means of an integral rivet including a wall panel having a hollow integral rivet provided with a transverse end wall and a peripheral wall. A tab element having an attachment opening defined by a continuous wall and the rivet extending through the tab element with the continuous opening defining wall in contact with the peripheral rivet wall. The opening defining wall having a lower inwardly convexly curved portion in surface to surface contact with a portion of the peripheral rivet wall having an outwardly concave configuration.

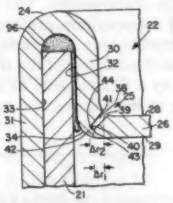


3,741,142

METHOD OF MAKING A TEAR-OPEN CLOSURE

Charles D. Stuard, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Mar. 27, 1972, Ser. No. 238,074
Int. Cl. B21d *51/00*
U.S. Cl. 113—121 C **4 Claims**



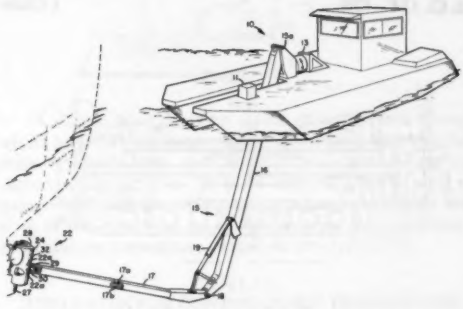
A method of making a substantially full opening tear-open sheet metal closure of the type having a removable panel and a circumferentially extending U-shape rim. The resulting closure has a continuous, circumferentially extending thin wall portion formed by a radially outwardly canted score line intermediate the removable panel and the rim which, being an endless predetermined line-of-weakening, facilitates removal of the removable panel. The thin wall portion is recessed from the outside surface of the rim. The raw edge formed on the rim upon removal of the removable panel by tearing along the predetermined line-of-weakening is wholly under the rim and is nearer the container body wall than the circumferentially extending smooth residual edge of the rim at the intersection between the wall of the score line and the outside surface of the contiguous portion of the rim. The method of forming the closure comprises sequentially die-folding the peripheral area of a pre-scored blank to first form the inner chime wall and then to form the outer chime wall. While folding the inner chime wall, displacement of the edge of the blank from the plane of the removable panel portion of the blank is limited so that the outer chime wall portion of the blank is flared outwardly at the completion of forming the inner chime wall.

3,741,143

HULL INSPECTION PLATFORM

Larry E. McKinley, Escondido; Clarence S. Johnson, San Diego, and Justin E. Langille, III, Coronado, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1971, Ser. No. 214,325
Int. Cl. B63g *8/00*
U.S. Cl. 114—0.5 **5 Claims**



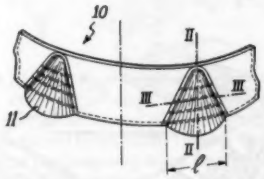
An articulated boom suspended from a catamaran-like vessel carries an observation compartment. Controls articulate the boom to place the compartment at a desired location, for example, to allow a close inspection of the bottom of a ship's hull. Life support conduits connect the compartment to the surface and safety equipment is included to permit an emergency exit should there be system failure.

3,741,144

SKIRTS FOR HOVERCRAFT

Raymond Henri Raux, Maisons Laffitte, France, assignor to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

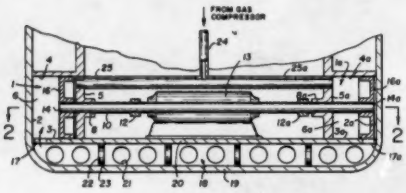
Filed Feb. 7, 1972, Ser. No. 223,939
Claims priority, application France, Feb. 12, 1971, 7104934
Int. Cl. B60v *3/06*
U.S. Cl. 114—67 A **11 Claims**



This invention relates to skirts for hovercraft, and the object thereof is the avoidance of the bailing effect or accumulation of water in the space defined by the skirt when the craft is moving. Most hovercraft skirts have a truncated conical shape in section, the walls thereof converging inwardly in the downwards direction. The invention proposes to cut away certain areas of the skirt and these areas are bridges by wall members or pockets which extend outwardly from the skirt and are of part-conical shape with the apex uppermost in the operating condition of the craft. The wall member or pocket may be reinforced by a metal strip which may be folded concertinawise so as to expand on the application of internal pressure and it may furthermore be cut away at the apex to provide an escape route for water, also to assist in the relief of built up pressure. The wall members or pockets may be made from a material less mechanically resistant than that of the skirt or

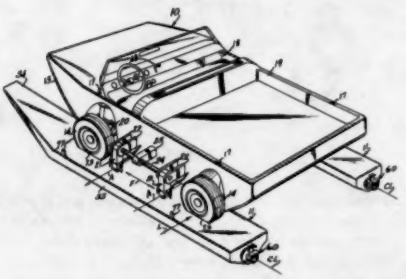
may be attached to the skirt by connection means that give way upon the application of excess pressure. Only one such wall member or pocket may be provided but, where a plurality of them is present, they are arranged symmetrically about the longitudinal axis of the skirt, i.e. the hovercraft, in the operating condition.

3,741,145
ACTIVE STABILIZER FOR MARINE VESSELS
Frederick D. Braddon, Babylon, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Nov. 23, 1970, Ser. No. 91,774
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 **1 Claim**



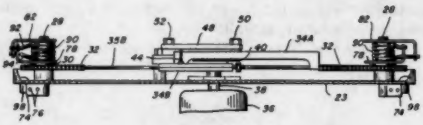
Active tank ship's stabilizer devices are disclosed having symmetrically positioned variable active tanks operated in cooperation by a hydraulic actuator. The variable volume tanks are arranged to permit injection or ejection of ballast liquid in a system avoiding the unstabilizing effects of free liquid surfaces and the power consuming effects of high pressure-heads.

3,741,146
AMPHIBIAN VEHICLE
Charles W. Durrell, Jr., Atlanta, Ga., assignor to B. J. Powell, Decatur and D. W. Griffith, Doraville, Ga., part interest to each
Filed Feb. 3, 1971, Ser. No. 112,116
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R **9 Claims**



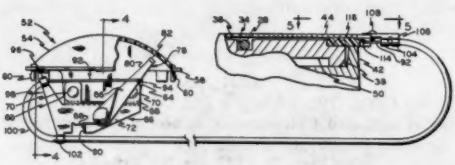
An amphibian vehicle comprising a wheeled vehicle with a floatable body shell, a pair of pontoons disposed on opposited sides of the wheeled vehicle and linkage means connecting the pontoons to the vehicle. The linkage means is capable of selectively positioning the pontoons directly below the wheels or above the wheels and for connecting the pontoons to the vehicle through its normal suspension system. Each pontoon carries a propulsion means for driving the vehicle through the water.

3,741,147
TRAFFIC CONTROL SIGN
Donald M. Downing, 3737 West 44th Street, Tulsa, Okla.
Filed Aug. 3, 1972, Ser. No. 277,668
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 R **6 Claims**



This invention relates to an improved traffic control sign. More particularly, it relates to a sign similar to that of my U.S. Pat. No. 3,394,674, issued July 30, 1968, with an improvement to prevent damage to the movable wing portions of the sign by vandals forcing the rotation of the wings.

3,741,148
VEHICLE WITH TRANSMISSION AND POSITION INDICATOR
Hans Hauser, Fredericktown, Ohio, assignor to The J. B. Foote Foundry Co., Fredericktown, Ohio
Filed Sept. 9, 1971, Ser. No. 178,949
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 R **5 Claims**

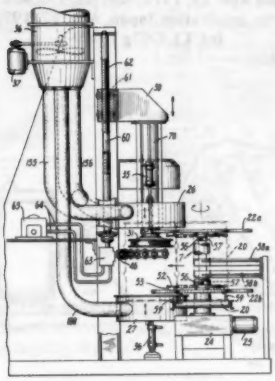


This invention relates to a lawn tractor with a multi-speed transmission mounted under an operator's seat, with a visual position indicator showing the operator the shift position of a shift member of the transmission. The position indicator is mounted in view of the operator, preferably near the steering wheel so as to be readily seen. The indicator has indicia corresponding to the shift positions of the transmission and has a pointer connected by a flexible wire to the shift member and movable therewith to indicate on the indicia the position of the shift member.

3,741,149
AUTOMATIC MACHINE FOR SPRAYING THE INTERIOR OF CONTAINER SHELLS
Albert F. Gerlovich, Fanwood, N.J., assignor to Rheem Manufacturing Company, New York, N.Y.
Filed Mar. 19, 1971, Ser. No. 126,201
Int. Cl. B05c *7/02, 11/16*
U.S. Cl. 118—2 **4 Claims**

A machine for automatically spraying the interior of hollow bodies such as drum shells or pails or other hollow container shells embodying an indexing turret type machine in which the articles are fed thereto in upright position with the axis vertical at one station and are indexed to a spraying station where shrouds advance over the end or ends of the article and a rotary centrifugal spray head makes a down and up cycle in the interior, the article then being indexed to a release station. The machine includes special features concerning a suction means in connection with the shrouds for drawing off vapors from the spraying area at each end of the shell in a uniform suction pressure condition throughout the peripheral extent and in a manner to prevent spray material being deposited on the outer surface of the body; magnetic means for holding the article within the turret in its rapid indexing steps; and a paint

supply means for the rotary and reciprocatory spray head including a stationary paint supply tube and valve seat with a coaxial non-rotary elongated valve member within the tube;



the entire operation being automatically controlled by an electrical circuitry embodying limit switches, solenoids and related elements.

3,741,150

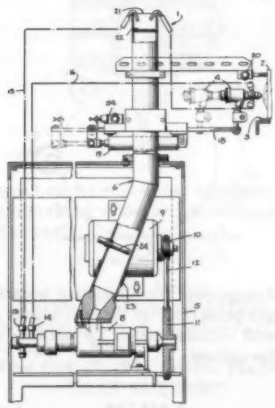
AUTOMATIC FLUX SPRAY DISPENSER

Carl A. Napor, Glen Ridge, and Charles G. Krumm, Wyckoff, both of N.J., assignors to Kahle Engineering Co., Union City, N.J.

Filed June 9, 1971, Ser. No. 151,360

Int. Cl. B05c *5/00*, *11/10*

U.S. Cl. 118—2 **3 Claims**



An improved automatic fluxing system is disclosed for applying flux to articles on a production line basis. The system includes an automatic spray gun with a movable mounting for directing the flux onto articles being presented to the spray gun by a conveyor. The system includes automatic nozzle controls and a flux supply system for the nozzle, particularly adapted for handling corrosive, abrasive and highly viscous fluxes. The flux supply system includes a special pump for continuously circulating flux in the reservoir in addition to continuously supplying flux to the nozzle. The circulating reservoir eliminates the need for flux agitators and also permits the flux to be heated and maintained at a uniform pre-set temperature making the flux supply independent of pump induced temperature variations and of temperature related viscosity changes.

3,741,151

APPARATUS FOR IMMERSING STEEL WIRES IN MOLTEN LEAD BATH INCLUDING FLOATING PARTICULATE- STRIPPER MEANS

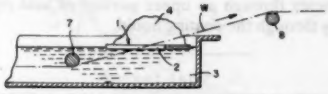
Kurt-Jurgen Schulze, and Joachim Jung, both of Oberbruch, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Division of Ser. No. 53,115, July 8, 1970, Pat. No. 3,669,761. This application Mar. 1, 1972, Ser. No. 231,050

Claims priority, application Germany, July 8, 1970, P 19 36 909.6

Int. Cl. B05c *11/02*

U.S. Cl. 118—123 **6 Claims**



A slotted plate floats on a bath of molten lead through which hot steel wires are passed for cooling. A particulate material in the form of a layer of granulated amorphous carbon is supported on the plate and is adapted to strip entrained lead from the wires passing through the molten lead, slots in the plate and particulate material while forming a non-oxidizing atmosphere around the emerging wires.

3,741,152

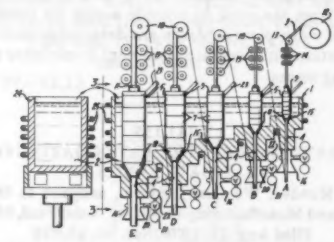
APPARATUS FOR CONTINUOUSLY TEEMING AND SOLIDIFYING VIRGIN FLUID METALS

Sylvester V. Williams, Omaha, Nebr., assignor to Elwin A. Andrus, Milwaukee, Wis., a part interest

Continuation of Ser. No. 820,846, May 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 497,177, Oct. 18, 1965, abandoned. This application Oct. 6, 1971, Ser. No. 187,192

Int. Cl. B05c *3/02*

U.S. Cl. 118—405 **4 Claims**



A tundish of virgin fluid metal has a vertical tubular stopper controlling the flow of fluid downwardly through a corresponding port in the bottom of the tundish and a rod of solid state metal is moved downwardly flowing fluid metal in accertion thereon as the stopper is raised from its seat. Where more than one stopper is employed, the bottom of the tundish is stepped to provide different depths of fluid metal head for each successive stopper and means are provided for moving the rod downwardly through successive stoppers for successive accretion of metal thereon in producing a continuous billet.

3,741,153

APPARATUS FOR TREATMENT OF LINEAR ELEMENTS

James H. Sears, Anderson, and Bernard H. Jones, Pendleton, both of S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

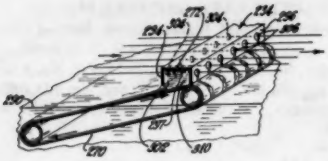
Filed Dec. 9, 1971, Ser. No. 206,447

Int. Cl. B05c *3/12*

U.S. Cl. 118—405 **12 Claims**

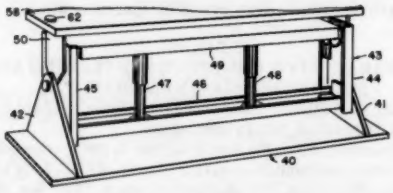
Coating receptacle means is defined by vertically extending walls and an open bottom. Scraper means operatively associated with the open bottom and a moving surface carrying coating liquid effects transfer of the liquid from said moving

surface and upwardly through the receptacle. Means pass



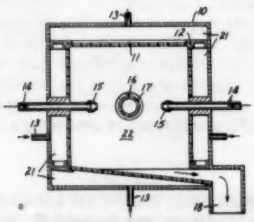
linear elements through an upper portion of said receptacle and thereby through the coating liquid.

3,741,154
MASKING FIXTURE FOR SPRAY PAINTING
Harry Szczepanski, 900 Clancy, N.E., Grand Rapids, Mich.
Filed Dec. 27, 1971, Ser. No. 212,179
Int. Cl. B05c *11/14*
U.S. Cl. 118—503 **10 Claims**



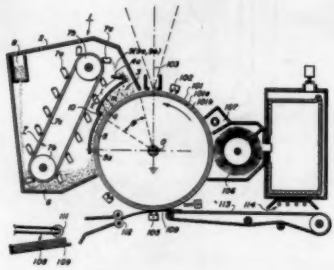
A fixture for providing accurate placement of a mask unit with respect to parts to be spray painted. The parts are supported on a structure mounted for relative movement toward and away from the mask to provide access for insertion and removal of work pieces. Masks are detachably interengaged with the fixture with accurate placement to minimize the delay in replacing masks.

3,741,155
APPARATUS FOR PARTICULATE COATING OF AN ELONGATE ARTICLE
David N. Hunder, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Aug. 21, 1970, Ser. No. 65,976
Int. Cl. B05c *11/16;* **B05b** *5/02;* **B44d** *1/0911*
U.S. Cl. 118—634 **4 Claims**



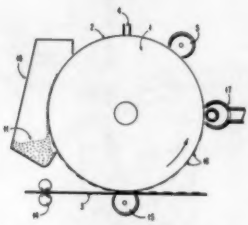
A substantially closed shell contains an air pervious liner defining an inner chamber for coating an article with thermoadhesive particles. Air flowing continuously through the liner toward the article in the chamber prevents buildup of the thermoadhesive particles on either the top or sides of the chamber. The chamber may be formed with a pair of openings to permit the entry and exit of pipe to be coated.

3,741,156
XEROGRAPHIC DEVELOPMENT APPARATUS
Seiji Jo, Tokyo, and Katsuo Makino, Odawara, both of Japan, assignors to Xerox Corporation, Stamford, Conn.
Filed Apr. 13, 1971, Ser. No. 133,656
Claims priority, application Japan, Apr. 17, 1970, 45/32292
Int. Cl. G03g *13/00*
U.S. Cl. 118—636 **3 Claims**



A cascading development apparatus which is equipped with a developer pool at the upper portion of the development zone and a development electrode at the lower portion that provides high development efficiency, good solid area coverage and reduced background density.

3,741,157
ELECTROPHOTOGRAPHIC PLATE CLEANING APPARATUS
Konrad A. Krause, Mount View, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,627
Int. Cl. B05b *5/02;* **A47l** *5/14*
U.S. Cl. 118—637 **10 Claims**

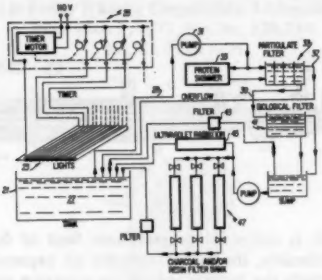


An electrophotographic plate cleaning apparatus utilizing air under pressure being directed through nozzles and onto the plate surface with vacuum means for drawing the removed material from the surface.

3,741,158
PRE-CONDITIONING PROCESS FOR INDUCED SPAWNING
Martin A. Moe, Jr., Juno Isles, and Jay P. Dunathan, Tequesta, both of Fla., assignors to Oceanography Mariculture Industries, Inc., Riviera Beach, Fla.
Filed Nov. 29, 1971, Ser. No. 202,809
Int. Cl. A01k *61/00*
U.S. Cl. 119—3 **6 Claims**

A process for pre-conditioning of fish in preparation for induced spawning which comprises isolating a brood stock of sexually immature or inactive fish from the natural environment by placing the stock into a water media suitable for sustaining life in a healthy condition, whereby water quality, temperature and degree of light exposure and light intensity can each be selectively controlled, adjusting the temperature

and degree of light exposure and intensity so that sexual development of the blood stock is suppressed until spawning is



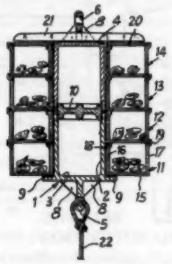
desired and thereafter readjusting the temperature and degree of light exposure and intensity so that sexual maturity of the brood stock is rapidly attained.

3,741,159

CAGE FOR BREEDING SHELLFISH

Lazare Nathan Halaunbrenner, 17 bd. Edgar Quinet, Colombres, France

Filed July 30, 1971, Ser. No. 167,710
Claims priority, application France, Aug. 12, 1970, 7029710
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **34 Claims**



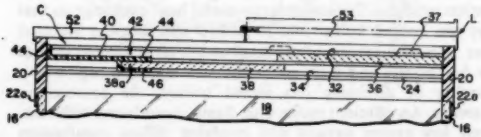
Float-equipped cage for shell-fish comprises a basket-like receptacle incorporating a float and means for attaching a line at the bottom thereof.

3,741,160

COVER FOR AN AQUARIUM

Clark L. O'Dell, Saginaw, Mich., assignor to O'Dell Manufacturing, Inc., Saginaw, Mich.

Filed Sept. 27, 1971, Ser. No. 184,046
Int. Cl. A01k *64/00*
U.S. Cl. 119—5 **11 Claims**



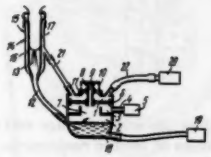
An open top aquarium having a pair of upper end support members with double tracks slidably receiving a pair of relatively movable cover sections, and an additional, easily cuttable cover section removably clamped to one of the relatively movable cover sections.

3,741,161

MILKING APPARATUS FOR MILKING LACTIFEROUS ANIMALS

Zinovy Yakovlevich Zhuk, Parkovaya ulitsa, korpus 1, kv. 50, and Genrikh Vladimirovich Baskakov, Angarskaja ulitsa, 49, korpus 3, kv. 88, both of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 805,657, March 10, 1969, abandoned. This application June 3, 1971, Ser. No. 149,586
Int. Cl. A01j *5/10*
U.S. Cl. 119—14.36 **4 Claims**



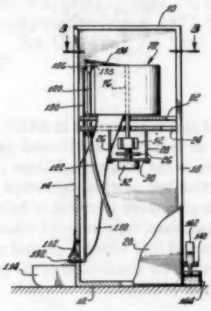
A milker for lactiferous animals particularly in situations where the milk is to be transported a considerable distance or against a considerably hudraulic head in which a variable vacuum chamber is connected to a pulsator for causing pressure variations, a constant vacuum chamber is connected to means for producing a vacuum, a flexible diaphragm separates the variable vacuum chamber from the constant vacuum chamber, and an annular partition provides a passage between the constant vacuum chamber and a milk receiving space. The partition is so constructed that the flexible diaphragm functions as a valve against an upstanding flange or lip of the partition when the vacuum in the variable vacuum chamber is reduced, and the diaphragm also carries a passage means for admitting of air defining a movable valve element for connecting the milk receiving space to exterior ambient atmospheric pressure when the diaphragm functions as a valve against the partition.

3,741,162

AUTOMATIC ANIMAL FEEDING MACHINE

Antonio R. Lopez, 6050 Garden Dale Street, South Gate, Calif.

Filed Sept. 25, 1970, Ser. No. 75,376
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.13 **8 Claims**



A feeding machine for animals comprising a rotatable bin for feed having separated compartments which can be selectively rotated by an automatic timing mechanism to release feed and, optionally, water into a feeding chute.

3,741,163

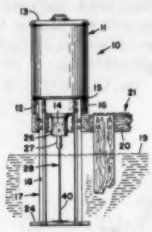
DEMAND-RESPONSIVE FISH FEEDER

Dale A. Bush, 1024 West Lovers Lane, Arlington, Tex.

Filed Nov. 13, 1970, Ser. No. 89,410
Int. Cl. A01k *5/02, 64/00*
U.S. Cl. 119—54 **17 Claims**

A fish feeder is operable to dispense quantities of particulate feed into a fish-containing body of water in response to

normal feeding activities of the fish. A hopper contains a supply of feed above the water surface and an actuating means, disposed externally of the hopper, includes a lower portion extending below the water surface and is operable to release desired quantities of feed in response to movement of the lower portion by fish adjacent the lower portion.

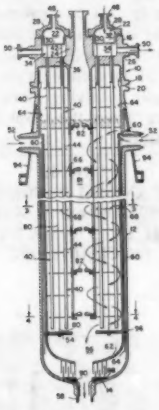


3,741,164

SODIUM-HEATED STEAM GENERATOR

Robert O. Barratt, Parsippany, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Mar. 3, 1971, Ser. No. 120,434
Int. Cl. F22b *1/16*
U.S. Cl. 122—32 **6 Claims**



A sodium heated steam generator in which the likelihood of tube failure from such factors as thermal growth is reduced and in which in the event of a tube failure the products of a sodium water reaction are quickly exhausted out of the steam generator. Water is generated to steam in bayonet tube assemblies extending downward into a vessel down through which liquid sodium flows and into which a central relief channel extends to provide means for the escape of the products of an accidental sodium water reaction.

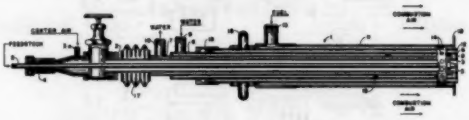
3,741,165

WATER-COOLED BURNER AND FEEDSTOCK INJECTION ASSEMBLY FOR CARBON BLACK REACTOR

Roy S. Matthews, Sunray, and Billy E. Willis, Houston, both of Tex., assignors to Continental Carbon Company, Houston, Tex.

Continuation-in-part of Ser. No. 59,962, July 31, 1970. This application Sept. 29, 1971, Ser. No. 184,934
Int. Cl. F22b *37/00*
U.S. Cl. 122—6.5 **4 Claims**

A burner and feedstock injection assembly for a carbon black reactor having a cooling-water jacket surrounding the center air pupe (which surrounds the center feedstock pipe). Means are included within the jacket for imparting a whirling motion to the water as it circulates through the portion of the jacket which is subjected to maximum heat of fuel combustion. Preferably, the jacket includes an expansion joint mounted outside the reactor toward the upstream end of the assembly.

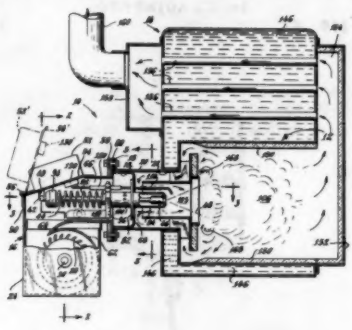


3,741,166

BLUE FLAME RETENTION GUN BURNERS AND HEAT EXCHANGER SYSTEMS

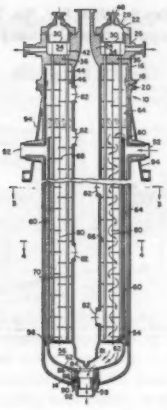
Frank W. Bailey, 60 Parkway Drive, East, East Orange, N.J.

Filed Feb. 10, 1972, Ser. No. 225,259
Int. Cl. F22b *31/00*
U.S. Cl. 122—23 **41 Claims**



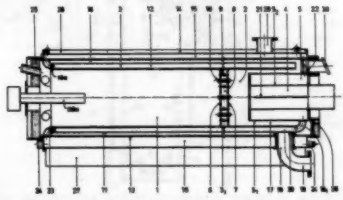
Blue flame retention gun burners and heat exchanger process and apparatus for burning liquid hydrocarbon fuel to produce a stable blue flame with low nitric oxide and low particulate (Bachrach) emissions. A major portion of the combustion air is passed in a vigorous jet action directed through a vitiation zone positioned upstream from a fuel injection region leading into a combustion chamber. The vigorous jet action creates a reduced pressure in entering the vitiation zone causing a portion of the gaseous products of combustion from the combustion chamber to be recirculated into this zone in which the combustion air is vitiated and chemically altered before encountering the fuel spray. During recirculation the combustion products therein undergo useful heat exchange so that they are cooled below 800°F. before entering the vitiation zone. A minor portion of the combustion air is utilized to cool the fuel nozzle and then enters the fuel injection region as a plurality of diverging jets aimed toward the combustion chamber. An efficient stable blue flame is produced with relatively low excess oxygen and involving diffuse combustion without allowing localized hot zones which would cause augmented NO formation and without ignition or stating transient instabilities. Many conventional air and oil handling components may be directly utilized in the practice of this invention, such as fuel pumps, blowers, motors, and fuel atomizing nozzles.

3,741,167
SODIUM-HEATED STEAM GENERATOR
John Polcer, Florham Park; Robert O. Barratt, Parsippany, both of N.J., and Allan E. Musterer, La Jolla, Calif., assignors to Foster Wheeler Corporation, Livingston, N.J.
Filed Mar. 2, 1971, Ser. No. 120,154
Int. Cl. F22b *1/06*
U.S. Cl. 122—32 9 Claims



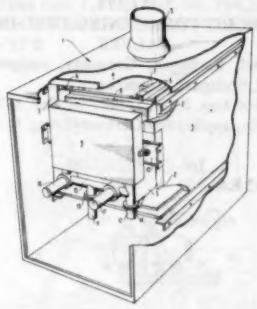
A sodium heated steam generator in which the likelihood of tube failure from such factors as thermal growth is reduced and in which in the event of a tube failure the products of a sodium water reaction are quickly exhausted out of the steam generator. Water is generated to steam in bayonet tube assemblies extending downward into a vessel down through which liquid sodium flows and into which a central relief pipe extends to provide means for the escape of the products of an accidental sodium water reaction.

3,741,168
BOILER FOR THE PRODUCTION OF HOT WATER
Raymond Paul Pierre Guillou-Keredan, Paris, France, assignor to Societe D'Etude Et De Construction De Chaudiers En Acier-Seccacier, Hauts de Seine, France
Filed May 3, 1971, Ser. No. 139,342
Claims priority, application France, Mar. 5, 1971, 7107815
Int. Cl. F22b *7/00*
U.S. Cl. 122—136 R 4 Claims



The object of the present invention is to produce a single combustion chamber boiler with an annular section for the evacuation of the gases with no obstruction in it, thus avoiding the incidence of turbulence and enabling the boiler body to have a small diameter.

3,741,169
WATER HEATER
Clarence S. Johnson, P.O. Box 940, Pomona, Calif.
Filed Oct. 14, 1971, Ser. No. 189,205
Int. Cl. F22b *37/10*
U.S. Cl. 122—367 C 4 Claims

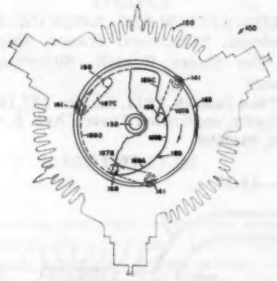


A water heater including a furnace having a plurality of horizontally disposed tubes forming a water tube boiler disposed therein; a vertically disposed preheater is connected to the boiler, and flow control valves are connected to the preheater; the boiler, preheater and flow control valves being constructed and arranged as a unit, slidably mounted on a track secured within the furnace housing, whereby the unit may be removed from the furnace through the furnace access door to facilitate the maintenance of the unit.

ERRATUM

For Class 122—510 see:
Patent No. 3,741,174

3,741,170
START-UP MECHANISM FOR ROTARY COMBUSTION ENGINE
John N. Hinckley, Beloit, Wis., assignor to Beloit College, Beloit, Wis.
Division of Ser. No. 820,331, Sept. 24, 1969, Pat. No. 3,660,978. This application May 8, 1972, Ser. No. 251,496
Int. Cl. F02c *5/12, 5/00*
U.S. Cl. 123—8.27 2 Claims



There is disclosed a start-up system for a rotary internal combustion engine induces a type having a plurality of swinging arms pivotally supported about the periphery of a rotor housing with a rotor supported by a power shaft controling the cycle of movement of the arms to define compression and combustion chambers in appropriately timed relation. A cam track and cam follower mechanism includes lift segments for driving the connected arms inwardly to expand the compres-

sion chamber and draw a charge of air-fuel mixture therein and release segments for releasing the cam followers to permit the rotor to drive the arm inwardly and compress the charge and transfer it to a combustion chamber. A cranking means induces rotation of the flywheel to initiate the start cycle. Other features are disclosed.

3,741,171

TIMING CIRCUIT FOR OPENING FUEL-INJECTION VALVES

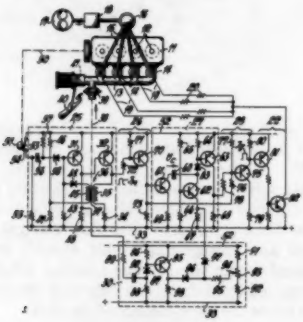
Wolfgang Dautel, Esslingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 2, 1971, Ser. No. 168,137

Claims priority, application Germany, Aug. 8, 1970, P 20 39 486.9

Int. Cl. F02d 5/00

U.S. Cl. 123—32 EA **8 Claims**



A fuel-injection arrangement for internal combustion engines with electromagnetically actuated fuel-injection valves and intake manifold. A monostable multivibrator provides output pulses having a duration dependent on at least one operating parameter of the engine, such as the suction pressure within the manifold behind the throttle valve. A pulse-extending stage connected to the monostable multivibrator emits an extending pulse adjoining each pulse from the multivibrator and having a duration which depends on the duration of the preceding pulse from the multivibrator. A second monostable multivibrator has an unstable state duration beginning with the extending pulse and lasting for a fraction of the duration of the extending pulse. A compensating network connected to the pulse-extending stage influences the duration of the extending pulse by either increasing or decreasing the duration of the extending pulse.

3,741,172

COOLING SYSTEM EXPANSION CHAMBERS

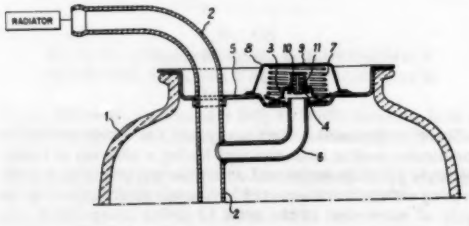
Bernard Andreux, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine), France

Filed June 28, 1971, Ser. No. 157,168

Claims priority, application France, Aug. 5, 1970, 7028846; Nov. 27, 1970, 7042698

Int. Cl. F01f 9/00

U.S. Cl. 123—41.27 **5 Claims**



Glass expansion chamber connected to cooling system by a tube going down to bottom of chamber, characterized by a pressure relief valve fitted between the aforementioned system and the expansion chamber, with a valve allowing air to enter from the outside if pressure drops in system fitted to expansion chamber stopper.

3,741,173

CYLINDER HEAD OF AN AIR-COOLED INTERNAL COMBUSTION ENGINE

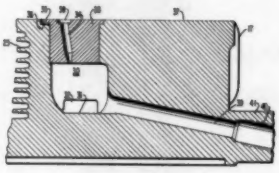
Manfred Christian, Berlin-Dahlem, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed May 9, 1968, Ser. No. 727,951

Claims priority, application Germany, May 12, 1967, D 53059

Int. Cl. F01p 9/04

U.S. Cl. 123—41.57 **14 Claims**



A cylinder head of an air-cooled internal combustion engine with additional oil cooling for those places subjected to maximum thermal loads, in which cooling surfaces are arranged on the inside of the cylinder head within a hollow space and an injection nozzle extends into the hollow space to inject cooling oil against the cooling surfaces while a discharge channel is connected with the hollow space.

3,741,174

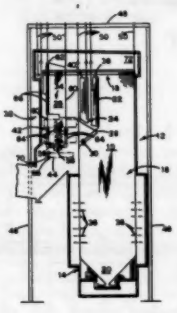
TUBE SUPPORTS

Alexander H. Rudd, Walter A. Hansen, both of Akron, Ohio, and James E. Ingersoll, Paris, Tex., assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed May 27, 1971, Ser. No. 147,551

Int. Cl. F22b 37/24

U.S. Cl. 122—510 **3 Claims**

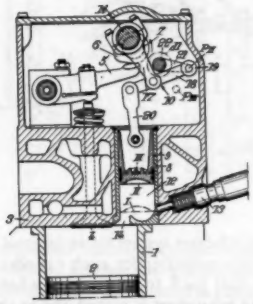


A vapor generator having a heat exchanger suspended within an upright gas passage wherein the heat exchanger comprises a first and second group of tubes and an arrangement for the support thereof including weldably connecting portions of said first and second group of tubes.

3,741,175
VARIABLE COMPRESSION RATIO INTERNAL COMBUSTION ENGINES

Henri Andre Rouger, Courbevoie, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed July 29, 1971, Ser. No. 167,300
Claims priority, application France, Aug. 3, 1970, 7028621
Int. Cl. F02b *75/04*
U.S. Cl. 123—48 A **11 Claims**

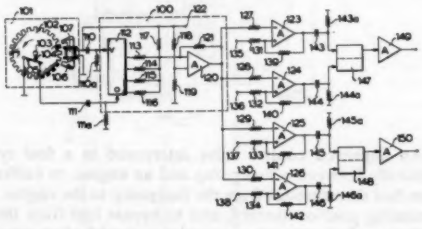


The internal combustion engine comprises at least one main cylinder in which a main piston driving a drive shaft moves, and a cylinder head over the main cylinder. An auxiliary piston slides in an auxiliary cylinder contrived in the cylinder head and communicating with the main cylinder. An actuating mechanism reciprocates the auxiliary piston at half the rate of the main piston piston reciprocation (four-stroke engine) or at the rate of main piston reciprocation (two-stroke engine). Control or adjusting means act on said actuating mechanism so as to vary auxiliary piston travel. The actuating mechanism is so devised that the offset between main piston and auxiliary piston reciprocations is such that the auxiliary piston reaches its inner dead centre position during the exhaust stroke (four-stroke engine) or during the scavenging stroke (two-stroke engine).

3,741,176
PULSE GENERATOR FOR CONTROLLING THE VALVES OF AN INTERNAL COMBUSTION ENGINE

Peter Schmidt, Schwieberdingen, and Lothar Raff, Hochberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 19, 1971, Ser. No. 173,008
Claims priority, application Germany, Jan. 15, 1971, P 21 01 761.8
Int. Cl. F01l *9/02, 9/04, 1/34*
U.S. Cl. 123—90.12 **25 Claims**

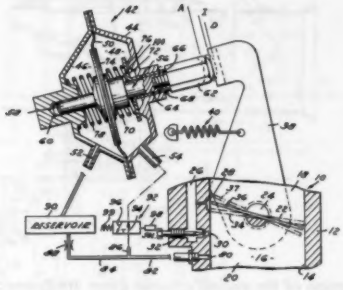


A pulse generator rotating synchronously with the crank shaft of the engine feeds pulses through a differentiator to a staircase generator of which the output is connected to the inverting inputs of four operational amplifiers acting as threshold switches, the outputs of which are connected to respective inputs of two bistable triggers of which the outputs are connected each to a switching amplifier that controls the inlet or outlet valve of one cylinder of the internal combustion engine. In one modification, the invention is adapted to a four cylinder engine.

3,741,177
CARBURETOR THROTTLE VALVE POSITIONER

Thomas C. Schultz, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 1, 1971, Ser. No. 194,258
Int. Cl. F02d *11/08, 9/00;* **F02m** *19/12*
U.S. Cl. 123—97 B **6 Claims**

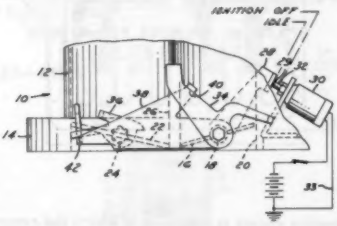


The throttle valve of a downdraft type carburetor is controlled in its movement by a servo in turn controlled by manifold vacuum changes; servo springs initially move the throttle valve to a high idle speed setting for engine starting as well as engine idling; engine deceleration vacuum moves the servo diaphragm to open the throttle valve for better emission control; and, engine shutoff permits vacuum in a reservoir to temporarily move the throttle towards a closed position to prevent dieseling.

3,741,178
ANTI-DIESELING CARBURETOR STRUCTURES

Raymond J. Cedar, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 4, 1971, Ser. No. 186,370
Int. Cl. F02d *33/00*
U.S. Cl. 123—97 B **5 Claims**



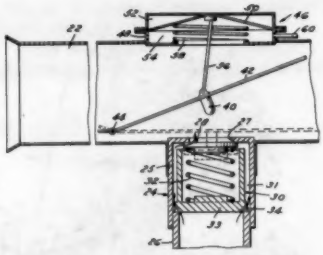
An anti-dieseling two-stage carburetor structure for a gasoline internal combustion engine. The carburetor includes a solenoid which determines distinct primary throttle blade positions at idle and at ignition-off. A lever system interconnects the solenoid and the secondary throttle plates. Upon opening the ignition circuit of the engine, the de-energized solenoid simultaneously causes the primary throttle plates to close completely and the secondary throttle plates to partially open. The closing of the primary throttle plates stops any fuel flow resulting from airflow through the primary venturis, while the partial opening of secondary throttle plates bleeds air to the intake manifold and eliminates any fuel flow responsive to intake manifold vacuum.

3,741,179

EXHAUST GAS RECIRCULATING SYSTEM CONTROL

Richard D. Vartanian, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 1, 1971, Ser. No. 158,755
Int. Cl. F02m 25/06
U.S. Cl. 123—119 A 10 Claims



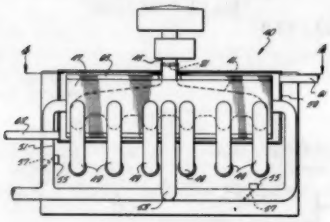
A portion of the engine exhaust gases are connected to the engine air cleaner through valving that is opened to permit recirculation in response to normal accelerating levels of engine spark port intake manifold vacuum, and is closed to terminate recirculation upon a buildup in exhaust gas back pressure acting on the valving.

3,741,180

APPARATUS FOR VAPORIZING A FUEL-AIR MIXTURE IN THE INDUCTION SYSTEM OF AN COMBUSTION ENGINE

Barlane R. Eichbaum, 12065 Stoney Brook Drive, Reno, Nev.

Filed Apr. 9, 1971, Ser. No. 132,706
Int. Cl. F02m 29/04, 21/06
U.S. Cl. 123—122 A 4 Claims



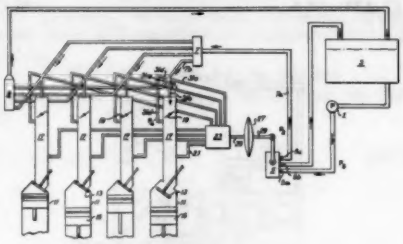
A combustion engine is disclosed in which the entire fuel-air mixture is vaporized within the intake manifold to combust more efficiently and completely in the combustion chamber, thereby significantly reducing exhaust emissions. The vaporization of the entire fuel-air mixture is effected by utilizing a portion or all of the available heat energy passing through the exhaust manifold in order to heat the intake manifold. In the various embodiments disclosed, the exhaust manifold either extends through, completely envelops, or is positioned adjacent the intake manifold for heat transfer purposes. In all cases, suitable bypass conduits and valve means are provided to relieve a portion or all of the heat energy from heating the intake manifold. A screen is also provided in the intake conduit between the carburetor and the intake manifold to disperse the fuel-air mixture and prevent any droplets formed in the carburetor from passing therethrough.

3,741,181

TIMED FUEL INJECTION SYSTEM

Norman W. Martin, 6008 B Maine Road, Plattsburgh Air Force Base, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,609
Int. Cl. F02m 39/00
U.S. Cl. 123—139 AW 6 Claims



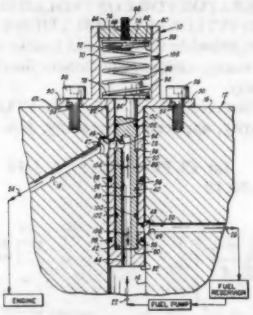
A timed fuel injection system for an internal combustion engine has a fluidic amplifier for each cylinder. The amplifier acts to divert fuel back to a reservoir when the cylinder's intake valve or equivalent is closed and to switch fuel to the injector when the intake valve is open. The amplifier diverts fuel when the vacuum within one cylinder's intake manifold is exceeded by the average vacuum of all cylinders and switches fuel when the intake vacuum of the one cylinder exceeds the average vacuum of all cylinders.

3,741,182

CONTROL VALVE

Kenneth C. Wade, Midwest City, and D. L. Adcock, Oklahoma City, both of Okla., assignor to said Kenneth C. Wade by said D. L. Adcock

Filed Feb. 8, 1971, Ser. No. 113,490
Int. Cl. F02d 1/04; G05d 11/00
U.S. Cl. 123—140 FG 15 Claims

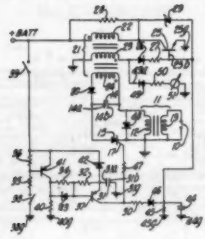


An improved control valve interposed in a fuel system, generally between a fuel pump and an engine, to bufferingly pass fuel therethrough from the fuel pump to the engine, in an operating position thereof, and to bypass fuel from the fuel pump to a fuel reservoir at a predetermined fuel pressure, in a bypass position thereof, thereby governing the maximum pressure of fuel being supplied to the engine injectors. The control valve basically comprises a valve body having a valve member slidingly disposed in a valve chamber formed in a portion of the valve body. The valve member is biased to an operating position and constructed such that the fuel pressure biases the valve member to a bypass position at a predetermined fuel pressure.

3,741,183
CAPACITOR DISCHARGE IGNITION SYSTEM

Theodore F. Sturm, 44900 Viejo Drive, Hemet, Calif.

Filed Dec. 22, 1969, Ser. No. 886,972
Int. Cl. F02p 1/00
U.S. Cl. 123—148 E 1 Claim

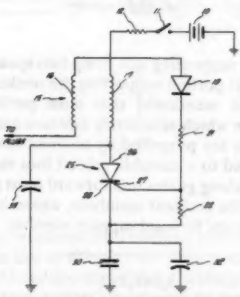


An improved capacitor discharge ignition system for internal combustion engines, wherein the ignition system utilizes a discharge capacitor power source placed in shunt with the primary winding of a transformer which automatically turns off upon saturation thereof so that the magnetic field collapses and the secondary winding of the transformer produces a pulse current to charge the capacitor. The capacitor is subsequently placed in shunt with the primary winding of a pulse transformer so that the secondary winding thereof delivers a high voltage spark to the distributor and ultimately the spark plugs of an engine. In the ignition system of this invention the capacitor discharge sequence and the transformer charging sequence are commenced simultaneously so that a maximum number of sparks are capable of being produced in the minimum amount of time.

3,741,184
ELECTRO-MECHANICAL SWITCHING SYSTEM

James L. Tanner, Reseda, and Bruno A. Rist, Northridge, both of Calif., assignors to Tanner Electronic Systems Technology Inc., Northridge, Calif.

Filed Nov. 8, 1971, Ser. No. 196,438
Int. Cl. F02p 1/00
U.S. Cl. 123—148 E 5 Claims

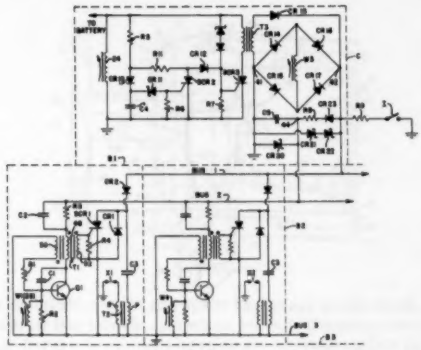


An electronic switching system having particular utility in ignition systems for internal combustion engines is disclosed. A silicon controlled rectifier in series with the inductor coil and breaker points is utilized to isolate the breaker points from the ignition coil and to carry out the make and break functions. Should the SCR fail as by shorting, the ignition system will continue to operate as a conventional ignition system.

3,741,185
CAPACITOR DISCHARGE IGNITION SYSTEM

Thomas E. Swift, West Springfield, and Elwin J. Brayley, East Longmeadow, both of Mass., assignors to Eltra Corporation, Toledo, Ohio

Filed July 6, 1971, Ser. No. 159,610
Int. Cl. F02p 3/06
U.S. Cl. 123—148 E 9 Claims

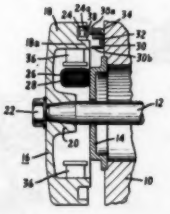


A flywheel alternator with permanent magnet energization is disclosed for general power purposes which has combined with it charging means for a capacitor or capacitors for a capacitor-discharge distributor-less ignition circuit or circuits suitable for use with single or multiple cylinder engines, wherein separate trigger coils are energized by a separate permanent magnet rotated with the flywheel to control the timing in the ignition circuit or circuits. The separate permanent magnet energizing the trigger coil or coils is provided with an automatic ignition advance device, which changes the ignition timing in accordance with variations in speed.

3,741,186
ELECTRIC GENERATOR FOR SPARK IGNITED ENGINE

Hitoshi Doi, Ukyo-ku, Kyoto, Kyoto Prefecture; Yoshihisa Honsyo, and Masanori Uetani, both of Himeji, Hyogo Prefecture, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushki Kaisha and Mitsubishu Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Dec. 18, 1970, Ser. No. 99,633
Int. Cl. F02p 1/00
U.S. Cl. 123—149 R 8 Claims



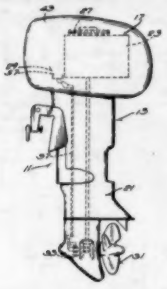
A cup-shaped rotor is provided on the inner wall with plural permanent magnets and on the annular end with an annular groove. With the rotor rotated in synchronism with the operation of an engine the magnets succesively pass past a stationary coil forming a part of a capacitor discharge system for generating the electrical power to produce the spark while a permanent magnet disposed within the groove periodically passes past another stationary coil to generate a voltage permitting the spark to be produced to ignite the engine.

3,741,187

ENGINE STARTER MECHANISM

Bernard R. Niebur, Waukegan, Ill., and Thomas W. Peters, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 3, 1972, Ser. No. 250,041
Int. Cl. F02n *15/06, 11/10*
U.S. Cl. 123—179 K 17 Claims



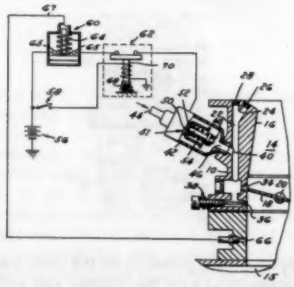
Disclosed herein is a marine propulsion device comprising an engine starter including a rotatably mounted shaft and a pinion carried by the shaft for movement relative to the shaft and relative to an engaged position in mesh with an engine starting gear, and cooperating, selectively operable means on the shaft and pinion for displacing the starter pinion to the engaged position in response to shaft rotation and for preventing movement of the starter pinion to the engaged position, notwithstanding shaft rotation. In one embodiment, there is included a linkage connecting the selectively operable means to a transmission shiftable between a neutral condition and a drive condition and operable to selectively operate the cooperating means on the shaft and the pinion for displacing the starter pinion to the engaged position and for preventing movement of the starter pinion to the engaged position.

3,741,188

CARBURETOR IDLE SYSTEM AIR BLEED

Roger E. Rickey, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 3, 1971, Ser. No. 204,616
Int. Cl. F02m *19/12, 1/14*; F02d *33/00*
U.S. Cl. 123—198 DB 3 Claims



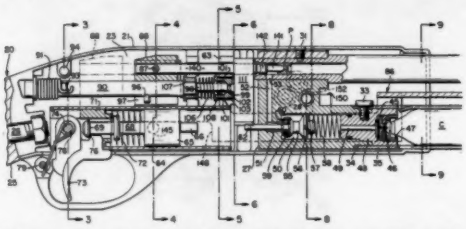
The carburetor idle system air/fuel channel has an additional air bleed that is opened and closed by an electrically controlled valve that is initially opened upon engine shutdown to bleed the idle channel fuel signal, to terminate fuel flow, and subsequently closed in response to engine vacuum decay, to recondition the idle channel for normal operation.

3,741,189

GAS-OPERATED PELLET GUN WITH REMOVABLE CLIP LOADER

Charles E. Kester, Fairport, and Thomas E. Hughes, Palymra, both of N.Y., assignors to Crosman Arms Company, Inc., Fairport, N.Y.

Filed Mar. 29, 1971, Ser. No. 128,910
Int. Cl. F41b *11/06*
U.S. Cl. 124—11 R 6 Claims



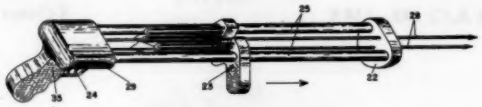
This gun is adapted to fire pellets from a cartridge clip, which carries several pellets. Each clip has a rotary cylinder, that has a plurality of chambers, and each chamber holds a pellet. In addition, each clip may be removed from the gun through an opening in the gun housing. When a clip is put in the gun a face coupling member on its cylinder engages with face coupling teeth on a counterpart coupling member that is connected to the manually operable bolt of the gun. The bolt on each retracting movement indexes the clip cylinder to bring a new pellet into registry with the gun barrel, and on each advancing movement pushes the new pellet into the barrel. On each retracting movement the bolt also cocks a trigger-releasable hammer. When the trigger is pressed to release the hammer, the hammer opens a valve to permit a supply of compressed gas to flow in behind the pellet in the gun barrel to drive (fire) the pellet from the gun.

3,741,190

DOUBLE LOADED SPEAR GUN

Walfrido R. Lopez, 24-46 44th St., Astoria, N.Y.

Continuation-in-part of Ser. No. 879,766, Nov. 25, 1969, abandoned. This application Apr. 7, 1971, Ser. No. 132,006
Int. Cl. F41b *7/04*
U.S. Cl. 124—22 8 Claims



A spear gun for supporting and firing two spears. The spear gun has a rear most portion supporting the nocked ends of the spears. The above mentioned rear most portion houses a trigger mechanism which selectively releases each of the two spears. The spears are propelled by resilient members which have ends anchored to a movable guided foot member that is moved forwardly along guides to a forward most position, during tensioning of the resilient members, where it is releasably attached to the spears' forward support member.

3,741,191

GLYCIDAMIDES FOR INDUCING A HYPNOTIC RESPONSE

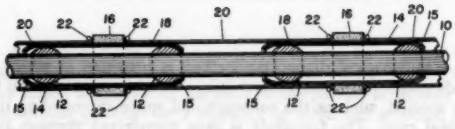
Carolyn M. Quick, Manteca, Calif., assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 5,109, Jan. 22, 1970, Pat. No. 3,646,211. This application Oct. 8, 1971, Ser. No. 187,882
Int. Cl. A61k *27/00*
U.S. Cl. 424—278 4 Claims

2-Phenylglycidamides such as 3-chloro-2-(2,4-dichlorophenyl) glycidamide, are described. The compounds

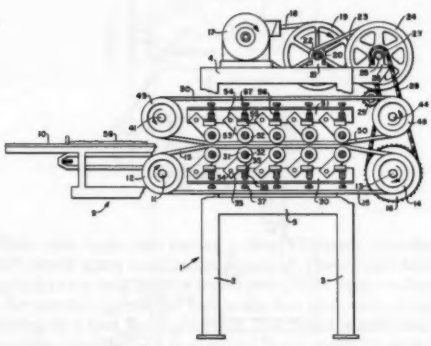
have utility in the polymer field and also possess useful biological activity.

3,741,192
ABRASIVE CABLE SAW CUTTING MEMBER
Ralph L. Avery, Cheektowaga, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Jan. 21, 1972, Ser. No. 219,815
Int. Cl. B28d *1/08*
U.S. Cl. 125—21 8 Claims



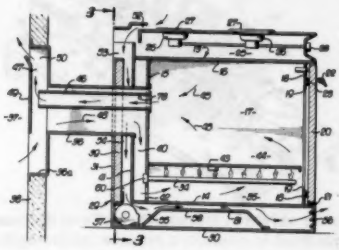
A cable saw in which the cutting members are abrasive bodies bonded to short sections of tubes. The ends of the tubes are swaged over spherical bodies attached to the cable so that the cable may float within the tubular cutting members during operation. The spaces between cutting members are bridged by flexible sleeves which protect the cable from loose abrasive particles.

3,741,193
SLATE TRIMMING MACHINE
Joel M. Le Sueur, Arvonia, and Everet M. Blauvelt, Bremo Bluff, both of Va.
Filed Apr. 8, 1968, Ser. No. 719,571
Int. Cl. B28d *1/32*
U.S. Cl. 125—23 T 8 Claims



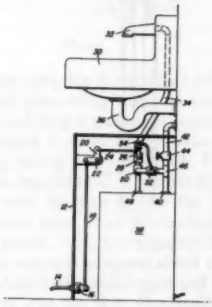
Method and machine for trimming slate chips to predetermined size for use as shingles, etc. The generally planar chips are fed to and between contacting, yieldingly mounted runs of upper and lower pairs of power-driven conveyor belts and, while under translation by and between the belt runs, move between two opposite, axially spaced pairs of circular trimming blades. Each pair consists of parallel, contiguous upper and lower blades, respectively, having beveled peripheral edges and which are slightly axially offset and have their contiguous peripheral portions slightly overlapping. The chips are thus simultaneously trimmed along two opposite parallel edges, to have the same desirable appearance as hand-trimmed shingles.

3,741,194
OVEN AND SPACE HEATER APPLIANCE
W. S. Herron, Rowland Heights, Calif., assignor to Ward & Son, Inc., City of Industry, Calif.
Filed June 2, 1971, Ser. No. 149,225
Int. Cl. F24c *3/00*
U.S. Cl. 126—85 B 10 Claims



Combination oven and space heater apparatus usable on a trailer or like vehicle comprises: an oven chamber containing a gas burner; multiple passage means providing a first passage for air supply from the trailer exterior to the burner, a second passage for conducting combustion products flowing to the trailer exterior, and a third passage for conducting trailer interior air in heat receiving relation to the oven chamber and then back to the trailer interior; and means to control combustible gas delivery to the oven burner in response to temperature conditions in the oven, thereby to maintain the oven chamber temperature within a predetermined range to control heating of trailer interior air to desired level.

3,741,195
THERMOSTATICALLY CONTROLLED WATER SUPPLY SYSTEM
Sloan E. Ellis, San Saba, Tex., assignor to San Saba Development Association, San Saba, Tex.
Filed Oct. 13, 1971, Ser. No. 188,868
Int. Cl. G05d *23/13*
U.S. Cl. 126—362 5 Claims



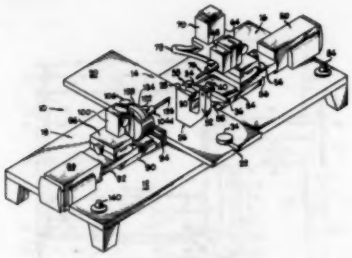
A compact, thermostatically controlled water supply system comprising a water heater for supplying hot water through an outlet to a junction with an incoming cold water supply line and a delivery pipe, a flow valve located in one of the lines responsive to the temperature of water flowing through the delivery pipe to control the ratio of cold and hot water mixed at the junction, and pedal-actuated valve in the delivery pipe to permit the flow of mixed water to the lavatory.

3,741,196

ANIMAL ORGAN EXTRACTION DEVICE

Edwards H. Veech, 105 Poquito Road, Shalimar, Fla.

Filed Feb. 22, 1972, Ser. No. 227,893
Int. Cl. A61b *10/00*
U.S. Cl. 128—1 R 13 Claims



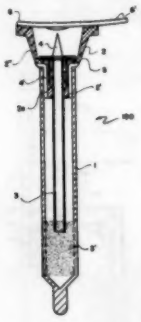
An animal organ extraction device including an animal retaining clamp, a discharge probe movably mounted on one side of the clamp and connected to a source of gas under pressure, and a receiving probe movably mounted on the other side of the animal for receiving an organ discharged responsive to application of gas pressure through the discharge probe.

3,741,197

PERCUSSION APPARATUS FOR BLOOD SAMPLING

Manuel C. Sanz, Grand Lancy, Geneva, and Georges Revillet, Onex, Geneva, both of Switzerland, assignors to Micromedia Systems, Inc., Philadelphia, Pa.

Filed Sept. 3, 1971, Ser. No. 181,423
Claims priority, application Switzerland, Sept. 4, 1970, 13352/70
Int. Cl. A61b *5/14*
U.S. Cl. 128—2 F 8 Claims



An apparatus for taking blood samples which involves strapping a blood collector tube to the part of the body from which the sample is to be taken. The blood collector tube has a resilient collapsible funnel which, when compressed, allows a lancet to puncture the dermis and epidermis. A striker member is placed on the end of the tube and a piston, normally held in a spring compressing position by a latch is released thus allowing the spring to impact on the base of the tube, compressing the funnel member and allowing the lancet to puncture the skin.

3,741,198

RADIOLOGICAL DIAGNOSTIC METHOD

Charles Burton, Gladwyne, Pa., assignor to Temple University, Philadelphia, Pa.

Filed Oct. 12, 1971, Ser. No. 188,337
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 A 11 Claims

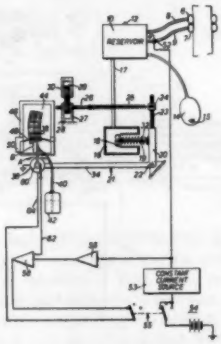
A radiological diagnostic method is provided in which a radiopaque ferrofluid is injected into a body system which is to be studied, such as the subarachnoid space surrounding the spinal cord. The ferrofluid is then transferred through the body system by applying a magnetic force to the ferrofluid. The portions of the body system of particular interest are radiographicly or fluoroscopicly examined while the ferrofluid is present in these areas. The ferrofluid is thereafter removed by drawing it back to the point of introduction and removing it from the body system. The diagnostic method of this invention is especially useful in myelographic studies.

3,741,199

CLINICAL BLOOD PRESSURE MEASURING APPARATUS

John E. Sharpe, London, England, assignor to Wilkinson Sword Limited, London, England

Filed Sept. 29, 1971, Ser. No. 184,666
Claims priority, application Great Britain, Oct. 7, 1970, 47,740/70
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 M 10 Claims

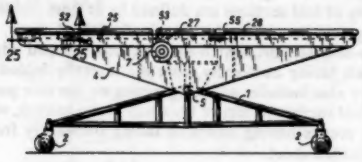


A pair of inflatable cuffs, for encircling a patient's limb, are connected to a reservoir and pumped up above the systolic pressure. The reservoir and cuff pressure is allowed to leak controllably and, via a bellows arrangement, the falling pressure turns a pivotal arm whose distal end carries an electric motor. A recording pen extends radially from the motor shaft and moves along a pressure axis on a chart as the arm pivots. When the falling pressure reaches the systolic level, blood pulsations generate pneumatic pulses in the cuffs which are electrically detected by an anomometer and cause the motor shaft to oscillate, providing transverse pen movement. Such oscillations diminish when the falling pressure reaches the diastolic level.

3,741,200
ORTHOPEDIC TREATMENT TABLE

Henri Morin, 7582 Lisieux Street, Montreal, Quebec, Canada

Filed Oct. 20, 1971, Ser. No. 190,714
Int. Cl. A61f 5/00
U.S. Cl. 128—71 25 Claims

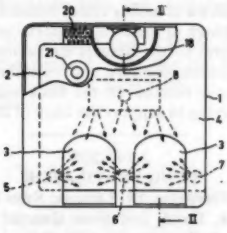


An orthopedic treatment table conceived to be operated by the patient himself and arranged to effect spinal traction by the action of gravity on the body of the patient supported in recumbent position on a plurality of table top sections, all slidably mounted onto an angularly elevatable frame relative to a supporting base. Crank-operated latches are provided to lock any table top section to an adjacent table top section relative to the frame, such that the table top sections can be variably connected relative to each other.

3,741,201
FOOT CARE APPARATUS

Benjamin Hijman Oudkerk, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,434
Claims priority, application Netherlands, Nov. 19, 1970, 7016930
Int. Cl. A61h 9/00
U.S. Cl. 128—66 5 Claims



Foot care apparatus having a foot treatment chamber in which liquid spray nozzles are arranged. Pressurized liquid is supplied to the nozzles by a liquid pump. The liquid is directed by the nozzles against the feet in the feet treatment chamber, resulting in a foot massage effect. The liquid is collected in a collecting chamber and re-supplied to the pump for recirculation.

3,741,202
NON-SLIP RETENTION MEANS FOR USE ON A WEARER'S HEAD

Willis Ema Morgan, 4225 Birchman Avenue, Fort Worth, Tex.

Continuation-in-part of Ser. No. 58,435, July 27, 1970, abandoned. This application Nov. 8, 1971, Ser. No. 196,385
Int. Cl. A61f 5/08
U.S. Cl. 128—76 B 14 Claims

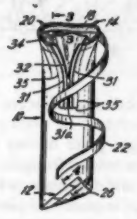
A non-slip head gear and a retainer employing the same, the head gear being characterized by a cap means having a hook strip on its interior surface with its tiny hooks protruding interiorly for engagement with the hair of the wearer and having an exterior strip of pile strap with its loops protruding exteriorly for receiving mating hook strips that are connected with other elements such as a retainer body. The retainer body is characterized by net material that is elastic along the fiber of the net and is even more elastic along the bias of the fiber for conforming to irregular contours. Also disclosed are preferred embodiments in which the exterior strips of pile strap are ex-

tensive enough to allow attachment of a wide variety of hook strip configurations; wherein a plurality of hook strips are fixedly disposed at predetermined locations for a predetermined hook strip configuration; and wherein neck straps are attached to the retainer body for tensioning it rearwardly toward the rear of the neck, the neck straps having mating hook strips and pile straps on their respective free ends.

3,741,203
PROTECTIVE COVERING

Peter C. Liman, Scarsdale, N.Y., assignor to Dryspell Industries Inc., New York, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,984
Int. Cl. A61f 13/00
U.S. Cl. 128—82 7 Claims

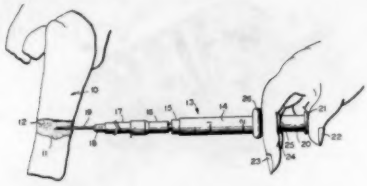


A protective covering is provided for encasing an injured body limb and preventing water or other harmful contaminants from contacting a wound, its bandaging, or a cast. The covering includes a sheet of synthetic limp flexible plastic forming a bag having an open mouth. The mouth is sealed to the skin of the injured limb at a point spaced from the wound and remote from the free end of the limb by a spongelike elastomeric foam layer which is attached to the interior of the bag near the mouth. Attached adjacent the mouth of the bag is a flexible tape which is wrapped about the exterior of the bag to insure a substantially water-tight and air-tight seal between the bag mouth and the skin. Optionally provided is a valve between the interior and exterior surfaces of the bag enabling the bag to be inflated, thus minimizing contact with the wound. The bag may be inflated with oxygen or any gas prescribed to facilitate healing. To adjustably accomodate for various lengths of a limb with either a bandage and/or a cast, an adhesive strip is affixed to the bag adjacent the closed end. The closed end may be folded back, shortening the overall length of the bag, until the desired length is attained whereupon the adhesive strip is secured to a side of the bag to maintain the closed end in its folded over position.

3,741,204
METHOD OF TREATING BONE FRACTURES AND NON-UNIONS

Geraldine H. Thiele, Glen-Haven Farm, Route 1, Box 12, Windber, Pa.

Filed Feb. 8, 1971, Ser. No. 113,362
Int. Cl. A61f 5/00; A61b 17/04
U.S. Cl. 128—92 R **14 Claims**

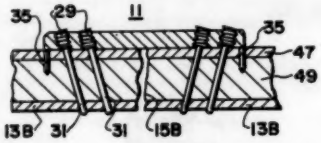


Fractures and nonunions of bones are more readily healed without muscle atrophy, etc., by injecting a liquefied composition containing a non-necrotic vascular sclerosing agent into the site of the fracture or nonunion. No cast is used. The preferred non-necrotic vascular sclerosing agent is sodium morrhuate.

3,741,205
BONE FIXATION PLATE

Keith L. Markolf, 2701 Ridge Road, No. 202, Berkeley, Calif., and Norman M. Harris, 39 Crest Road, Piedmont, Calif.

Filed June 14, 1971, Ser. No. 152,604
Int. Cl. A61f 5/04
U.S. Cl. 128—92 B **1 Claim**

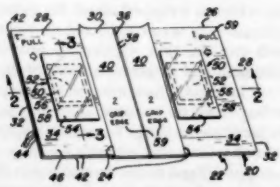


A device for immobilizing adjacent bones or bone fragments or affixing prostheses or orthopaedic structures to a bone, comprising a rigid plate having pin means removably secured therein so as to extend from the plate at an angle with respect to each other and the plate, whereby, upon insertion of the pins into a bone, the plate and pin assembly will hold the bones, bone fragments, orthopaedic structures, or prostheses in a fixed position.

3,741,206
FENESTRATED DRAPE

William J. Binard, and John F. Dye, both of Barrington, Ill., assignors to The Kendall Company, Walpole, Mass.

Filed July 29, 1971, Ser. No. 167,196
Int. Cl. A61f 13/00
U.S. Cl. 128—132 D **24 Claims**

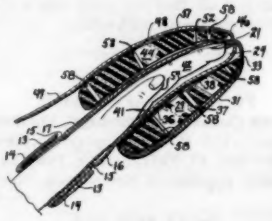


A fenestrated drape comprising a sheet of flexible material. The sheet has a pair of longitudinally extending side edges, a pair of laterally extending end edges connecting the side edges, a first surface for contacting a patient's body after placement of the drape, and a second surface which faces away from the patient after placement. A pair of longitudinally extending fold lines in the sheet define a pair of side panels which are folded against a central panel, extending between the longitudinal fold lines, with the second surface of the side panels facing the second surface of the central panel. A plurality of fold sections are defined by at least one laterally extending fold line in the longitudinally folded sheet, and at least one fold section, which extends from an end edge, has side panels facing outwardly from the laterally folded sheet. The drape also includes adhering means on the side panels of the one fold section to secure the sheet to the patient, with the adhering means having adhesive facing outwardly from the laterally folded sheet.

3,741,207
HAND RESTRAINING MITT

Edith Gale Fuson, 2520 Carmichael Way, Carmichael, Calif.

Filed Apr. 14, 1971, Ser. No. 133,783
Int. Cl. A61f 5/37
U.S. Cl. 128—133 **7 Claims**

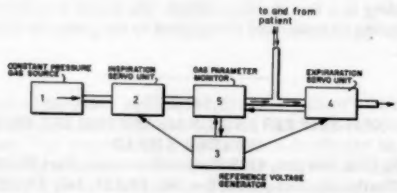


For use by arthritics or patients whose thumb and fingers on both hands need to be restrained to prevent harm a mitt has a snugly fitting cuff with a security strap. At least the palm side of the mitt includes a chamber either inflated with air or filled with a resilient block of foam-like material with the palm side shaped to conform to the natural curvature of the wearer's hand. For maximum comfort and restraint, a comparable pocket structure is formed on the back side of the mitt to receive a pad serving to support the back of the wearer's hand.

3,741,208
LUNG VENTILATOR

Bjorn Jonsson, Stavgatan 19, Lomma; Sven Ingelstedt, Nehrmansvagen 24, Lund, and Sven Gunnar Olsson, Lillhersbyvagen 10A, Sollentuna, all of Sweden

Continuation-in-part of Ser. No. 749,205, July 31, 1968, abandoned. This application Feb. 23, 1971, Ser. No. 117,889
Int. Cl. A61m 16/00
U.S. Cl. 128—145.6 **14 Claims**

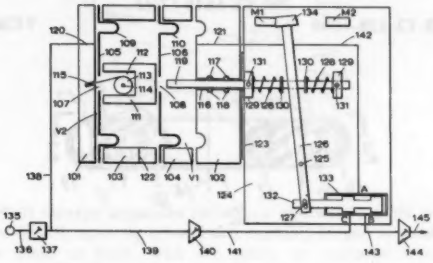


A lung ventilator is provided with means for controlling the magnitude of a variable of the flow of respiratory gas in the inspiration line or in the expiration line or in both of them and means for automatically modulating said control means in response to the instantaneous magnitude of said variable of said flow thereby maintaining a desired pattern of said magnitude of the flow.

3,741,209
MEDICAL RESPIRATORS

Barry John Kipling, Cambridge, England, assignor to Pye Limited, Cambridge, England

Filed Dec. 30, 1970, Ser. No. 102,852
Claims priority, application Great Britain, Apr. 7, 1970, 16,339/70
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 **1 Claim**

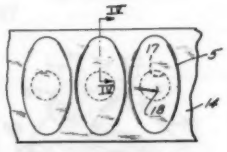


A medical respirator having switching means to control flow of patient gas from a pressure source through a control means into a variable volume during an expiration period of the respirator and from the variable volume to the patient through restrictive means during an inspiration period. The gas container is divided into two volumes by a movable member, the first volume being variable and the ratio of volumes varying with the position of the movable member. Gas for the patient is expelled from the first volume during part of the inspiration period by decrease of the capacity of the first volume as a result of the movement of the movable member caused by the pressure of the patient gas in the second volume.

3,741,210
SURGICAL PADS

John Johnston, Michigan City, Ind., assignor to Scholl, Inc., Chicago, Ill.

Division of Ser. No. 865,604, Oct. 3, 1969, abandoned. This application Sept. 22, 1971, Ser. No. 182,746
Int. Cl. A61f *5/30*
U.S. Cl. 128—153 **4 Claims**



Surgical pads for relieving the pain of corns, callouses, bunions, abrasions, etc., which pads are made of thermoplastic chemical foam and each having an affliction-receiving cavity pressed into the body of the pad from the underface of the pad.

3,741,211
FINGER MOUNTED NEEDLE ASSEMBLY WITH MANIFOLD

Walling D. Vreeland, Jr., 3910 Country Club Road, Winston-Salem, N.C.

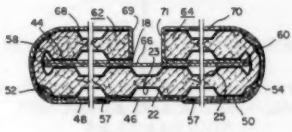
Filed Sept. 22, 1971, Ser. No. 182,650
Int. Cl. A61m *5/32;* **A61b** *17/20*
U.S. Cl. 128—221 **6 Claims**

A needle designed for medical injections which can be inserted prior to actuation into one or more body orifices. The first embodiment includes an arcuately shaped guide and slidably contained needle conforming generally to but not beyond the injection operator's extended finger wherein the needle may be retracted into the guide to avoid piercing flesh while being positioned for injection and extended from the guide when injection is desired. A second embodiment includes a U-shaped manifold conforming to the injection operator's extended finger having a spring-biased protective rib covering one or more downwardly extending needles communicating with the manifold so that the needles can be isolated from body tissue until the needle is in position for injection at which time the operator's finger may be flexed to extend the needles through apertures in the rib for penetration into the adjacent tissue. Both embodiments require attachment to one or more syringes for operation by the free hand of the injection operator once the needle has been positioned at the location where injection is desired.

3,741,212
DIAPER SYSTEM AND ABSORBENT PAD THEREFOR

Richard W. Schutte, Newton Square, Pa., assignor to Scott Paper Company, Delaware County, Pa.

Filed Aug. 2, 1971, Ser. No. 168,133
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **15 Claims**

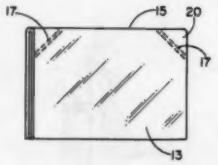


A diaper system having an elongate, fluid impervious pad-retaining garment and an elongate, disposable absorbent pad removably retained in the garment. The elongate, disposable absorbent pad includes an absorbent layer disposed within a covering envelope having a porous, elongate, adhesively bonded, fibrous facing cover web, and a backing cover web of a wet-strength paper stock. The absorbent layer includes a fluff batt of cellulosic fibers, and a lower layer of creped paper wadding disposed adjacent the bottom face of the fluff batt and having a transverse dimension at least substantially equal to the transverse dimension of the fluff batt. The facing cover web overlies a facing surface of the absorbent layer and has elongate side margins extending around elongate sides of the absorbent layer and overturned upon, and secured to the backing cover web. The backing cover web has a lower wet-cross-direction energy absorption level than the facing cover web, a higher wet-cross-direction energy absorption level than the lower layer of creped paper wadding, and is less permeable to the passage of urine than the facing cover web and the lower layer of creped paper wadding. Side regions of the absorbent pad include the absorbent layer and are infolded to define side panels having upper exposed surfaces defined by portions of the facing cover web. The backing cover web has elongate side margins terminating short of the infolded side regions so that the backing cover web is not disposed to underlie the portions of the facing cover web defining the upper exposed surfaces of the side panels.

3,741,213
PREFOLDED DISPOSABLE DIAPER

Dan D. Endres, Memphis, Tenn., assignor to Kimberley-Clark Corporation, Neenah, Wis.

Filed Jan. 3, 1972, Ser. No. 214,824
Int. Cl. A61f 13/16
U.S. Cl. 128—287 12 Claims



A disposable diaper of rectangular configuration is transversely folded on itself. Portions of the surfaces which contact each other, when the diaper is in folded condition, are joined together near each edge in an area spaced a predetermined distance away from the transverse foldline.

3,741,214
VARICER BOUGIE

Hans Tillander, Goteborg, Sweden, assignor to Astra-Meditec AB, Goteborg, Sweden

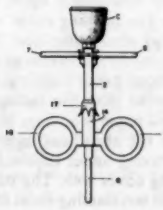
Filed Jan. 15, 1971, Ser. No. 106,728
Claims priority, application Sweden, Jan. 28, 1970, 1032/70
Int. Cl. A61m 29/00; A61b 17/00
U.S. Cl. 128—303 R 5 Claims

A disposable varicer bougie comprising a flexible and tensile strength wire-like device having vein stripping means affixed to its rear end. The wire-like device has a front end which is helically shaped, preferably with a specified pitch, and preferably terminating in a tapered portion.

3,741,215
INSTRUMENT USED FOR CIRCUMCISION AYAD S PREPUTOME

Fouad Mohamed Ayad, 166 Union Avenue, Warwick, R.I.

Filed May 12, 1971, Ser. No. 90,712
Int. Cl. A61b 17/32
U.S. Cl. 128—305 1 Claim

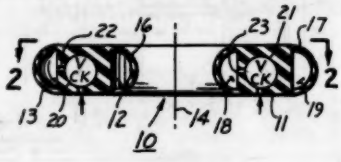


A surgical instrument for clamping the prepuce during the operation of circumcision has a finger operated sliding prepuce engaging and stretching hooks on leg of a U-shaped frame and a scissor-like clamp on the outer leg for securing the prepuce during the operation.

3,741,216
CERVICAL CUFF

Edward E. Yosowitz, Wichita Falls, Tex., and Donald K. McGhan, Santa Barbara, Calif., assignors to Heyer-Schulte Corporation, Santa Barbara, Calif., by said McGhan

Filed Jan. 3, 1972, Ser. No. 214,541
Int. Cl. A61b 17/42
U.S. Cl. 128—346 9 Claims



A cervical cuff for holding closed an incontinent cervix, comprising a stiffly flexible substantially inelastic support ring having a central axis and an inner and an outer peripheral wall. The inner wall forms an opening to receive the neck of the cervix. A first and second elastic impermeable membrane extends around and is mounted to the inner and outer walls respectively so as to form a first and second laterally expansible chamber. Inflation of the chambers extends the membranes so that the inner membrane engages the cervical neck inside the opening, and the outer membrane engages body tissue surrounding and spaced from the cervical neck. The ring is thereby retained in the body and the neck is held closed inside the ring.

3,741,217
RETRACTABLE CLOSURE CAP

Anthony J. Ciarico, Waukegan, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Aug. 17, 1971, Ser. No. 172,537
Int. Cl. A61m 25/00, 35/00
U.S. Cl. 128—349 9 Claims

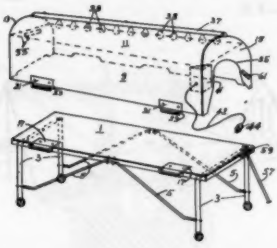
A closure cap for an irrigation side arm in a liquid drainage system including a drainage lumen and a channel extending through the side arm and communicating with the drainage lumen. The closure cap includes an annular rim removably secured to the outer end of the side arm, a stem having a bottom end and a top end, and a flexible wall extending between the rim and the stem adjacent the bottom end of the stem. The stem is movable between an inner position with the bottom stem end and wall received in the side arm channel, and an outer position with the bottom stem end removed from the channel and the wall folded through the rim substantially out of the channel, with the stem having a sufficient length to extend beyond the rim in the inner position.

3,741,218

HEAT THERAPY APPARATUS

Kurt Novak, 3307 California Avenue, St. Louis, Mo.

Filed June 9, 1971, Ser. No. 151,176
Int. Cl. A61h 33/06
U.S. Cl. 128—373 8 Claims



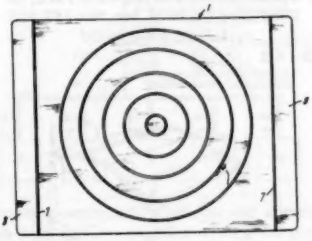
Heat therapy apparatus includes a lightweight table and a downwardly open rigid hood demountably hinged to a side of the table to form, with the table, an enclosed treating chamber. The hood has a row of downwardly directed incandescent lamps mounted in sockets secured to its inner surface along its longitudinal center line. A reflector shield, preferably of generally parabolic transverse section is mounted on the inner surface of the hood behind the incandescent lamps so as to direct the light and heat from the lamps in substantially parallel rays downwardly to the table and its occupant. Preferably the hood is constructed of fireproof material, and a heat insulating shield of asbestos or equivalent material is interposed between the reflector and the hood wall. The incandescent bulbs are preferably of the three-way type, and are controlled by a suitable switch accessible to the occupant of the chamber for selectively varying their intensity. To protect the incandescent lamps from damage and to protect the occupant of the apparatus from direct contact with the lamps, a screen extends across the hood below the lamps.

3,741,219

GROUNDING PLACE OR ELECTRODE FOR ELECTROMEDICAL EQUIPMENT

Robert W. Sessions, German Church Road, Hinsdale, Ill.

Filed Nov. 24, 1971, Ser. No. 201,910
Int. Cl. A61n 3/06
U.S. Cl. 128—417 4 Claims



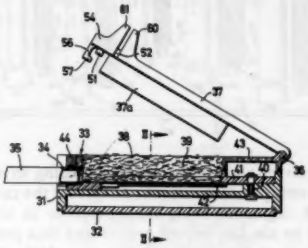
A disposable ground plate electrode for effecting a connection of electromechanical equipment to the body of a patient by surface contact, particularly with the aid of a conductive gel, in which the conductive surface of the ground plate is provided with a series of ridges preferably concentric, which are adapted to engage such a body surface and are of a size and shape insufficient to cause discomfort but sufficient to form retaining means for a conductive gel disposed therein to localize spreading such a gel, resulting from relative movement between such a body surface and the ground plate.

3,741,220

CIGARETTE-MAKING APPLIANCE

Helmut Meinunger, Radevormwald, Germany, assignor to Gizeh-Werk G.m.b.H., Bergneustadt/Rhineland, Germany

Filed Mar. 2, 1971, Ser. No. 120,196
Claims priority, application Germany, Mar. 2, 1970, P 20 09 678.0
Int. Cl. A24c 05/42
U.S. Cl. 131—70 3 Claims



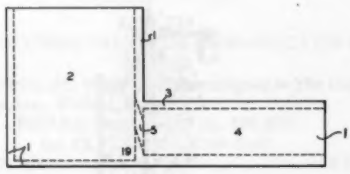
A device for filling a tube of cigarette paper with tobacco to make a cigarette including a casing, a slide, a chamber for tobacco formed in the slide, a nozzle mounted on the slide and communicating with the chamber, a clamp for holding the tube of paper on the nozzle, compression means mounted on the slide wherein tobacco in the chamber can be compressed into a plug by the compression means, and by manually pushing on the slide portion to reduce the chamber capacity, the plug is forced through the nozzle into the tube of cigarette paper thus forming a cigarette. The compression means is provided with a locking component cooperable with the slide to hold the compression means in a compressing position.

3,741,221

TOBACCO SMOKING AND SMOKE PROCESSING DEVICE

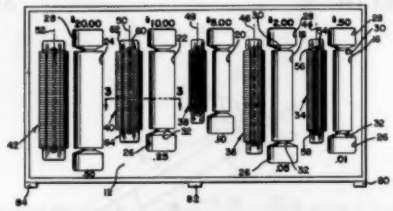
William W. Shisler, 778 Morning Street, Worthington, Ohio

Filed June 18, 1970, Ser. No. 47,204
Int. Cl. A24f 01/16
U.S. Cl. 131—210 5 Claims



A tobacco pipe for smokers that is characterized by a housing consisting of an integral bowl and shank. The bowl has a liner having an apertured bottom spaced above the bottom of the bowl housing. A system of nesting cup-shaped apertured baffles is attached to the lower end of the bowl liner. The system also includes an apertured horizontal disc. The parts of the system are relatively rotatable so that alignment of the apertures can be varied to control the smoke flow rate and direction at the exit of the system. The shank housing includes a series of plural baffles, each series being arranged to provide overlapping direction changing concentric smoke ducts. The housing has an apertured wall between the bowl and the shank and the shank baffles are arranged to deliver smoke to and through a mouthpiece.

3,741,222
COIN HOLDER AND COUNTING DEVICE
Elias Honesto, 128 Park Avenue, Apt. 3, San Francisco, Calif.
Filed June 21, 1971, Ser. No. 154,728
Int. Cl. G07d 9/00
U.S. Cl. 133—8 C 2 Claims

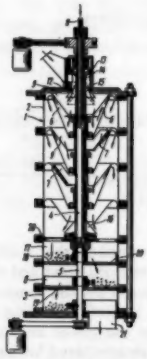


A coin receiving and holding board including an array of indicator segments pivotably mounted adjacent the coin-holding groove, such segments being manueverable to contact the coins as may be stacked in such groove and thus provide positive, immediate, and error-free designation of the total value of the coins in the stack.

ERRATA

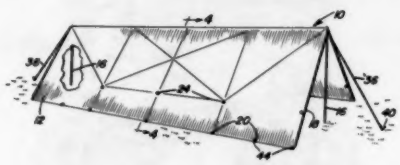
For Classes 134—171 and 134—58 see:
Patents Nos. 3,741,806 and 3,741,808

3,741,223
DEVICE FOR LIQUID TREATMENT OF GRANULATED PRODUCTS
Alexandr Alexandrovich Kavera, ulitsa Bryanskaya, 2a, kv. 35; Anatoly Anatolievich Nitkovskikh, pereulok Krupskoi, II, both of Krasnodar; Vladimir Andreevich Grigoriev, ulitsa Gerow-panfilovtsev, 13, kv. 40, Moscow; Arkady Borisovich Pashkov, Khoroshevskoe shosse, 74, korpus 3, kv. 56, Moscow, and Yakov Vulfovich Epshtein, ulitsa Pervomaiskaya 85, kv. 10, Moscow, all of U.S.S.R.
Filed Feb. 12, 1971, Ser. No. 114,866
Int. Cl. B01f 7/16; B08b 3/08
U.S. Cl. 134—191 7 Claims



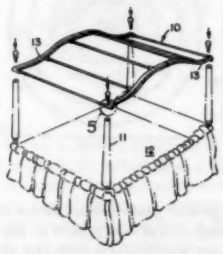
A device for liquid treatment of granulated products comprises a cylindrical housing accommodating a coaxially mounted shaft with stirrers, which shaft carries at least one cup, above which there is fixedly secured a guide with a central aperture, while the shaft is hollow within at least the section of one cup and is provided with radial holes for supplying the liquid.

3,741,224
SKELETON FRAME AND COVER SUPPORTED THEREFROM
John J. Clelland, Rochester, N.Y., assignor to Carrie J. Degus, Rochester, N.Y., a part interest
Filed Aug. 27, 1971, Ser. No. 175,611
Int. Cl. A45f 1/00
U.S. Cl. 135—1 R 10 Claims



A flexible cover panel assembly generally rectangular in plan shape and including a center longitudinal fold zone along which the panel may be folded over an elongated horizontal ridge support member. The cover includes opposite end tension anchor points at least closely adjacent the opposite ends of the fold zone and at least two longitudinally spaced side tension anchor points spaced along the opposite side longitudinal marginal portions of the cover and appreciably inwardly from the side edges and end edges thereof, with a first reinforcing center tension member secured to the cover and extending between the end tension anchor points, a second transverse reinforcing tension member secured to the cover and extending between each pair of corresponding side anchor points and at least one pair of third crossed diagonal reinforcing tension members on each side of said fold zone secured to the cover and extending between the intersections of the two crossed tension members with the center tension member and the corresponding side anchor points. Further, opposite end support standards and a tension member extending and tensioned between the upper ends of the standards is provided for support of the panel therefrom with the latter folded over the support tension member and the end tension anchor points anchored relative to the support standards and the side tension anchor points anchored to the ground or other suitable anchor areas.

3,741,225
CANOPY FRAME FOR BED
Kenneth H. Gunter, 3285 Dato, Highland Park, Ill.
Filed June 14, 1971, Ser. No. 152,902
Int. Cl. A47c 29/00
U.S. Cl. 135—5.2 1 Claim



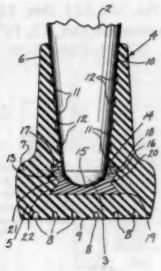
A canopy frame for a bed constructed of resilient plastic material in the longitudinally extending portions, and cross tie rods adapted to be dismembered for compact shipping and which are equipped with telescoping elements permitting adjustment for different lengths and widths of beds.

3,741,226

CRUTCH TIP WITH INSERT

Ted F. Urban, Oshkosh, Wis., assignor to Lamico Inc., Appleton, Wis.

Filed Sept. 30, 1971, Ser. No. 185,192
Int. Cl. A45b 9/04
U.S. Cl. 135—62 1 Claim



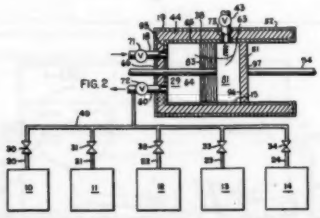
A resilient rubber-like crutch tip is provided with a crutch socket having therewith a generally cup-shaped insert of rigid material. The insert provides a recess for receiving the end of a crutch or the like, with the recess having a non-convex central portion and an outwardly tapering upwardly extending rim portion. As the crutch is tilted during normal use, the crutch end will apply pressure to the insert rim portion which in turn spreads the downward and sideways force components through a large area of the flexible tip socket side walls. In addition, in the embodiment shown, a generally V-shaped annular channel or groove is disposed in the outer wall of the insert to reduce the tendency of the insert to tilt. The neck portion of the tip socket is provided with undulations forming lands and grooves, with the lowermost undulation being a land.

3,741,227

FLUID PRESSURE REGENERATOR AND PROCESS

Raghunath Mokadam, Chicago, and Andrew A. Fejer, Oak Park, both of Ill., assignors to American Gas Association, Arlington, Va.

Filed Jan. 5, 1971, Ser. No. 104,009
Int. Cl. F02g 3/02
U.S. Cl. 137—1 2 Claims



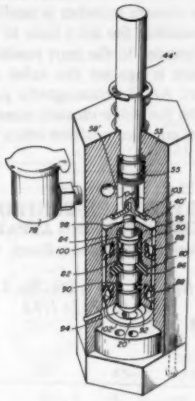
A fluid pressure regeneration process and apparatus useful in alternating high and low pressure cycle fluid systems comprising one or more valve means each of which in succession sequentially transfers into a series of storage vessels, each being isolated from the other and from the alternating fluid system by said valve means, successive fractional portions of the fluid exhausted from the alternating fluid system, during transition from the high pressure cycle to the low pressure cycle. Each such storage vessel has a different final pressure sequentially becoming lower with reduction of pressure in the alternating fluid system. Each isolated storage vessel contains and stores a fractional portion of the fluid. Recovery of the same fluid portions may be achieved by providing communication of each storage vessel with the alternating fluid system through each valve means in reverse sequence, thus transferring the fluid from the corresponding storage vessel into the alternating fluid system during transition from the low to the high pressure cycle. In this manner, fluid pressure may be stored and regenerated for use in alternating high and low pressure cycle fluid systems.

3,741,228

VALVE

Moses Beden, 466 Union Street, Lynn, Mass.

Filed Dec. 8, 1971, Ser. No. 205,949
Int. Cl. F16k 25/00, 39/00
U.S. Cl. 137—614.2 14 Claims



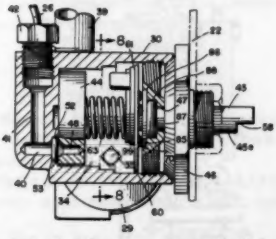
An improved valve includes a hollow valve body which contains slidably a floating piston. One end of the valve body includes inlet and outlet ports and the other end on the opposite side of the piston defines a fluid filled chamber. An axially slidable plunger extends through the valve body into the liquid filled chamber. As the plunger advances the pressure of the fluid in the chamber increases which urges the floating piston toward the inlet port to close it. A fail-safe feature is employed in that if the fluid leaks from the chamber, the continued advancement of the plunger will mechanically force the floating piston against the valve seat. In a modificaiton of the valve a double concentric piston is employed to effect a multiple concentric seal. The valve also includes an improved check valve at the inlet port.

3,741,229

SAFETY CONTROL VALVE FOR PROPANE CATALYTIC HEATER

Floyd O. Gruver, Jr., Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed July 6, 1971, Ser. No. 159,870
Int. Cl. F23d 5/16; F16k 5/10
U.S. Cl. 137—66 9 Claims



A safety control valve for propane catalytic heaters is provided which meters a desired amount of fuel to the catalytic heater head when the heater is operating but which prevents fuel flow when the heater is not operating. The valve includes

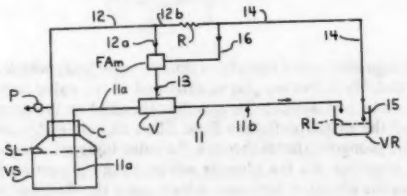
a casing in which a control shaft is rotatably mounted, the casing having a fuel inlet port and a fuel outlet port. An orifice plate is mounted on the shaft for rotation adjacent the outlet port and is provided with a plurality of different sized openings which are registrable with the fuel outlet port to regulate the amount of fuel being supplied to the heater. The shaft extends rotatably through a plate provided with position-indicating pockets which successively receive a ball bearing positioned within an opening in another plate which rotates with the shaft. The bearing is resiliently biased toward the position-indicating pockets by a presser plate which also includes an axially extending tang. The fuel inlet port is provided by a bore extending generally perpendicularly to the shaft, and a rod is slidably mounted within the bore and resiliently biased toward the shaft. A valve closure member is resiliently biased against a valve seat surrounding the inlet bore to close the bore, and when the shaft is rotated to the start position the tang engages the rod and pushes it against the valve closure member to open the inlet port. An electromagnetic power head is operatively connected to the valve closure member for holding the closure member in an open position when the catalytic heater is operating.

3,741,230

SELF-POWERED FEEDBACK-CONTROLLED VOLATILE LIQUID DISPENSING APPARATUS

W. Edward Samuels, 3119 Essex Road, Cleveland Heights, Ohio

Filed Apr. 22, 1971, Ser. No. 136,512
Int. Cl. F15c *1/12*
U.S. Cl. 137—81.5 **7 Claims**



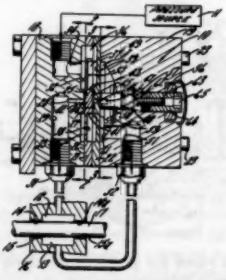
Apparatus for dispensing a volatile, especially cryogenic, liquid utilizing the liquid's vapor pressure from a free gas space in a closed liquid storage vessel top region as a power source both for transferring the liquid to a receiver and for a fluidic control system sensing the liquid level in the receiver and controlling liquid transfer from the source.

3,741,231

FLUID FLOW REGULATOR FOR HYDROSTATIC BEARING PADS

Jan Van Roojen, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed Jan. 12, 1972, Ser. No. 217,355
Int. Cl. G05d *11/00*
U.S. Cl. 137—101 **8 Claims**



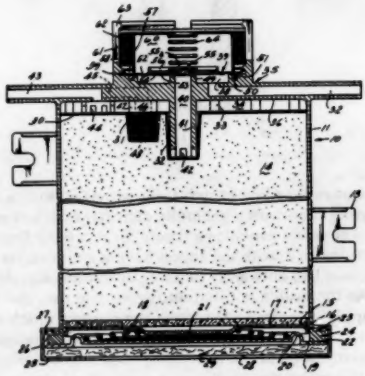
Equalization of the narrow widths of the fluid flow regulating gaps in a hydrostatic bearing system as shown in U.S. Pat. No. 3,442,560 is facilitated by making the outer wall of one of the gaps flexible and providing for axial adjustment of such wall from the exterior of the assembly.

3,741,232

VALVE FOR EVAPORATIVE LOSS CONTROL

George A. Soberski, Des Plaines, assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Division of Ser. No. 783,821, Dec. 16, 1968, Pat. No. 3,628,517. This application Oct. 12, 1970, Ser. No. 79,946
Int. Cl. G05d *7/00*
U.S. Cl. 137—102 **3 Claims**



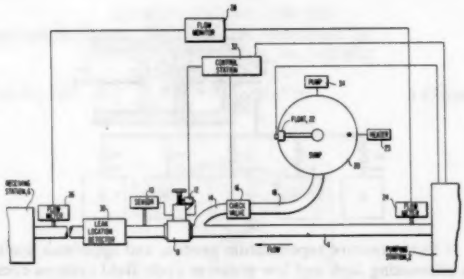
Diaphragm valve spring biased into a closed position and responsive to fuel tank vapor pressure to effect opening of valve, and to fuel tank vacuum as the valve is closed, to vent the tank to atmosphere.

3,741,233

LEAK PREVENTION SYSTEM FOR AN OIL PIPELINE

Raymond P. Smith, Jr., Williamsport, Pa., assignor to Craftmaster, Inc., Williamsport, Pa.

Filed Mar. 3, 1972, Ser. No. 231,480
Int. Cl. F04b *49/00*
U.S. Cl. 137—117 **14 Claims**



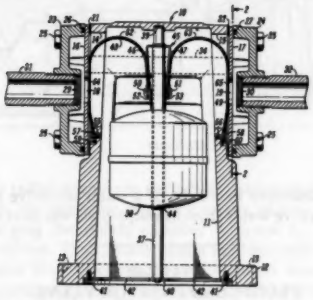
A system for preventing leaks in an oil pipeline indicating the automatic valve which is closed in response to the detection of a leak in the pipeline. An oil sump is connected to the pipeline upstream from the automatic valve. When the automatic valve is closed due to a leak, a check valve is open due to the pressure of the oil in the pipeline and the oil flows into the sump. When the sump becomes filled, the pumping station stops pumping oil and the oil remains in the sump until the pipeline is repaired. After the line has been repaired, the automatic valve and check valve are opened and oil flows from the sump to a receiving station downstream.

3,741,234

VALVE

Howard E. Siebold, Libertyville, Ill., assignor to Liquid Controls Corporation, North Chicago, Ill.

Filed Apr. 26, 1971, Ser. No. 137,509
Int. Cl. F16r *31/20*; F16k *45/02*
U.S. Cl. 137—202 4 Claims



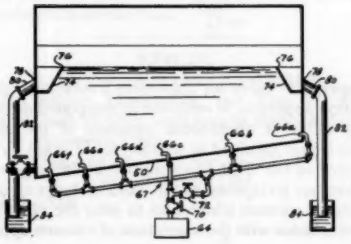
A valve member for an air eliminator is a flexible band or reed secured at one end to a movable float and at the other end to the housing adjacent a valve seat surrounding a port therein. A flexible sealing band formed of a resilient material overlies and is coextensive with the flexible band to provide a hermetic seal around the valve port when the float moves into a valve closing position. The sealing band is apertured where it overlies the port to equalize the pressure across the sealing band when it is positioned over the port.

3,741,235

WASHING AND PURGING APPARATUS FOR LIQUID SEALS

Alwin W. Ambrose, Enfield, and Joseph W. Parker, III, West Simsbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 30, 1971, Ser. No. 214,009
Int. Cl. F16k *11/02*
U.S. Cl. 137—238 5 Claims



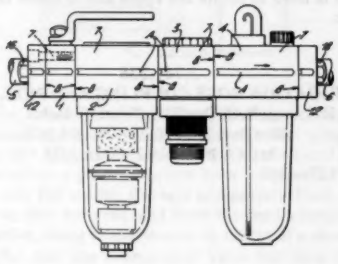
A washing and purging system for a liquid seal in the flue gas bypass duct of a steam generating facility having an air pollution control system. A series of nozzles positioned within the seal provide a continuous turnover of liquid and are also periodically used to flush accumulated particulate matter from the seal. Disposal of excess liquid from the seal is accomplished through the use of an overflow weir which also serves to skim off surface contaminant particles before they can settle to the bottom of the seal.

3,741,236

FLUID CONTROL AND CONDITIONING UNITS FOR INSERTION IN FLUID LINES

Peter John Pass; Douglas Wesley Carr, both of Shipston-on-Stour; Rogers Knight, London; Ronald Gelder, Moreton Morrell; Leslie William Smith, Shipston-on-Stour; Leonard Frederick Harris, Shipston-on-Stour, and Karel Leon August Van Bastelaere, Shipston-on-Stour, all of England, assignors to C. A. Norgren Limited, Shipston-on-Stour, Warwickshire, England

Filed Sept. 13, 1971, Ser. No. 180,037
Claims priority, application Great Britain, Sept. 21, 1970, 44,876/70
Int. Cl. F16k *11/10*
U.S. Cl. 137—269 18 Claims



A fluid control or conditioning unit with inlet and outlet ports, and more particularly a filter, pressure regulator and/or mist lubricator incorporated in a compressed air line, adapted to be positioned between supply and delivery pipes; and means having ports which register with those in the unit and are adapted to receive the ends of the pipes and act as coupling means therefor so that the ends of the pipes have no direct connection with the unit. The unit has plane external faces into which its inlet and outlet ports open and the ports in the said means also open into plane faces which oppose those of the unit, provision being included for sealing the ports of the unit with those of the coupling means and for securing the unit in sealed relation to the coupling means. Thus one and the same unit may be used with pipe ends of different size of type, and more particularly in the case of screw-threaded pipe ends and screw-threaded ports in the coupling means, one and the same unit may be used with threaded pipe ends of different size or type of thread by selection of the coupling means from a range. The combination is preferably such that the unit or one of a plurality of units in series may be withdrawn substantially by movement perpendicular to the axis of the ports without moving or removing the coupling members and preferably while a valve unit, likewise having plane faces into which its ports open, remains fixed to the coupling means for shut-off of flow during removal of a unit.

3,741,237

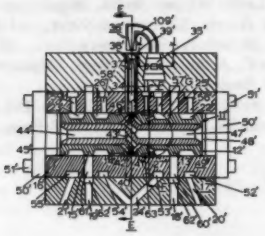
FLUID CONTROL VALVES

John Patrick Browne, Bletchley, Buckinghamshire, England, assignor to Sandall Precision Company Limited, Bletchly, Buckinghamshire, England

Filed Apr. 12, 1971, Ser. No. 133,152
Claims priority, application Great Britain, Apr. 27, 1970, 20,083/70
Int. Cl. F15b *5/00*; F16k *29/02*
U.S. Cl. 137—332 8 Claims

A fluid control valve has a spool located in a bore for controlling the flow of fluid from an inlet pressure port to outlet

ports depending on the position of the spool. In the embodiments described and illustrated a proportion of inlet fluid pressure is used to rotate the spool and to move the spool in the bore.



3,741,238

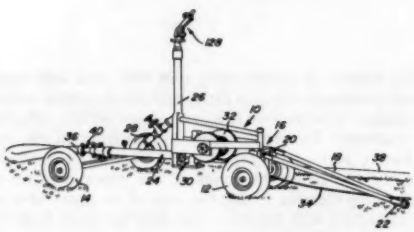
IRRIGATION HOSE COUPLING AND PULL END

Edward H. Lacey, P. O. Box 796, Trent, S. Dak.

Filed Dec. 2, 1970, Ser. No. 94,252

Int. Cl. B05b *9/02*; E01h *3/02*

U.S. Cl. 137—344 **5 Claims**



A high tension withstanding pull hose coupling including a first tubular water inlet pipe assembly mounted on a travelling support and including a rear inlet end opening outwardly in the direction opposite to the direction of movement of the support. The inlet end of the water inlet pipe assembly defines downstream tapering outer frusto-conical wedge surfaces and a wedge sleeve is loosely telescoped over the inlet end and includes downstream tapering inner frusto-conical wedge surfaces. An elongated tubular hose includes an outlet end telescoped over the outer wedge surfaces of the water inlet pipe assembly and the sleeve is telescoped over the hose outlet end with the wall portions of the hose outlet end clamped between the inner and outer conical surfaces of the sleeve and water inlet pipe assembly.

3,741,239

DEVICES FOR AUTOMATICALLY CONTROLLING THE WATERING OF PLANTS

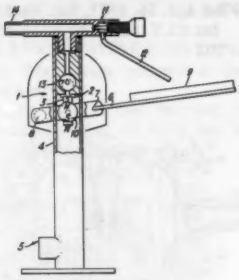
Frank Oliver George Riddiford, Nr. Bampton, Devon, Woodside, Shillingford, England

Filed Nov. 23, 1971, Ser. No. 201,294

Int. Cl. F16k *31/08*

U.S. Cl. 137—408 **16 Claims**

An automatic watering device for seeds or plants comprises a magnetic valve arranged in a waterflow conduit controlled by the movement of a permanent magnet outside of the conduit, the movement of such magnet being controlled by the increase and decrease in weight of a water retentive means arranged to receive water from the supply via the device.



3,741,240

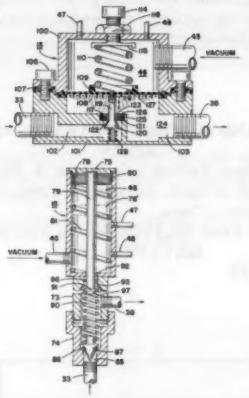
FLUID COMPENSATOR VALVE

Lester P. Berriman, Irvine, Calif., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 151,373, June 9, 1971, which is a continuation-in-part of Ser. No. 17,076, March 6, 1970, abandoned. This application Aug. 2, 1971, Ser. No. 168,233

Int. Cl. F16k *31/14*

U.S. Cl. 137—483 **11 Claims**



A compensator valve for dispensing a metered fluid supply to utilization apparatus in response to integrated demands imposed by different operational variables of the apparatus. Pressurized fluid received at an inlet is throttled by a spring biased valve as the fluid flows toward a discharge outlet. A sealed chamber juxtaposed to the valve includes an inlet for a connection of vacuum which acts to alter the effective valve bias in accordance with the magnitude of vacuum applied.

3,741,241

HYDRAULIC FUSE

Harry Yale Jackson, Cherry Hill, N.J., assignor to Eaton Corporation, Cleveland, Ohio

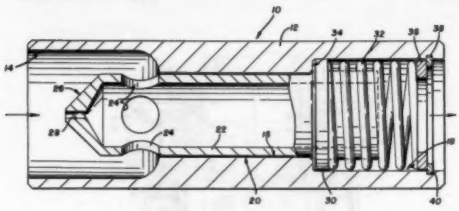
Filed July 29, 1971, Ser. No. 167,311

Int. Cl. F16k *1/44*

U.S. Cl. 137—504 **5 Claims**

A hydraulic fuse includes a body defining a cylindrical bore therethrough. A tubular piston including a radially extending opening therein is located in the cylindrical bore of the body

and is resiliently biased to a normally open position. The tubular piston member is of low mass and is movable against the force of a resilient biasing means in response to fluid flow quantities above a predetermined maximum. During movement of the tubular piston against the force of the resilient biasing means the internal wall of the cylindrical bore partially



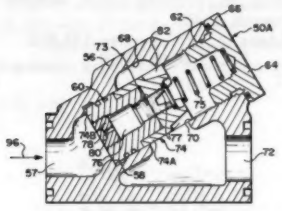
closes the radial opening in the tubular piston member thereby increasing the pressure drop across the piston member and further urging the piston member to move to a no-flow or closed position. The tubular piston member may be provided with a pilot flow opening therethrough so that a predetermined quantity of flow may exist across the piston member when the radial opening therein has been completely closed.

3,741,242

REFRIGERANT FEED CONTROL AND SYSTEM

Charles C. Hansen, Hinsdale, and John D. Nilles, Roselle, both of Ill., assignors to Refrigerating Specialties Co., Broadview, Ill.

Filed Dec. 10, 1971, Ser. No. 206,671
Int. Cl. F16k *31/363*; **F25b** *43/00*
U.S. Cl. 137—504 **15 Claims**



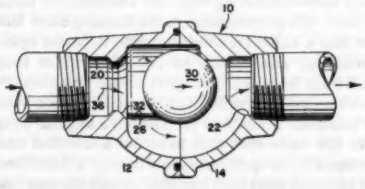
An automatic flow regulator for refrigeration systems in which a fixed flow control orifice in series with a spring-opened flow regulating valve are carried on the same member for access laterally from the refrigerant line for servicing and making changes in orifice sizes.

3,741,243

BALL CHECK VALVE ASSEMBLY

Robert R. Deibler, Loudonville, and Tom W. Patterson, Hayesville, both of Ohio, assignors to Hydr-O-Matic Pump Company, Hayesville, Ohio

Filed Apr. 26, 1971, Ser. No. 137,331
Int. Cl. F16k *15/04*
U.S. Cl. 137—528 **3 Claims**



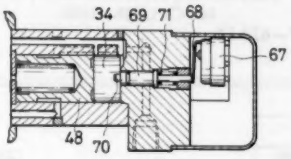
A check valve assembly which consists of a housing having inlet and outlet ports connected by an internal chamber and a ball contained within the chamber and movable between a position intermediate the inlet and outlet ports and a valve seat at the inner end of the inlet port. The chamber includes a bypass of large cross-sectional area to permit liquid flow around the ball when the valve is in its open position.

3,741,244

VALVE SYSTEM

Yoji Ise, 6-18 Shimomaruko 2 chome, Ota-ku, Tokyo, Japan

Filed Mar. 30, 1972, Ser. No. 239,451
Claims priority, application Japan, July 2, 1971, 46/48640
Int. Cl. F16k *37/00*
U.S. Cl. 137—554 **11 Claims**



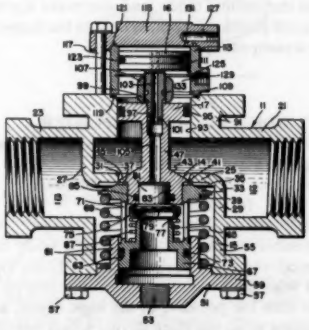
This valve system provides with a pilot valve having a valve action caused by a spool which moves within a casing providing with a pair of ports. In said pilot valve, the spool is forced to be pressed in a given direction by a compressed fluid introduced into the casing, the said compressed fluid, which is supposed to flow towards load from the feed source through the pilot valve, being changed-over by means of a change-over valve. In the case the change-over valve has been changed-over on the side of the pilot valve, therefore, said spool is not forced to be pressed but in turn forced to be pressed in the opposite direction by means of an operating means. In such a case just mentioned, a control means functions to discharge the fluid being present in the casing, said control means controls a moving speed of the spool by adjusting the amount of the discharge thereof. The pilot valve is effected to be opened or closed with said movement of spool, the operative time being controllable in proportion to the moving speed of the spool. The time to start operation of the pilot valve after receiving a control command by way of an operating signal given to the change-over valve can be controlled by the positioning relation between ports and grooves in speed, and the moving speed of spool.

3,741,245

BLOCK AND VENT VALVE

Benjamin W. West, 237 La Espiral, Orinda, Calif.

Filed June 9, 1971, Ser. No. 151,466
Int. Cl. F16k *11/00*
U.S. Cl. 137—596.18 **2 Claims**



A valve assembly is described of the so-called block and vent type wherein the valve is normally closed with the

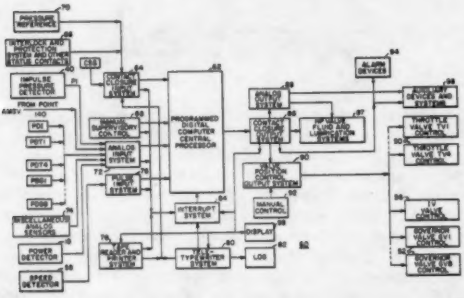
downstream side vented. When a pilot pressure is applied, it first closes the vent and then opens the valve partially. On application of a second pilot signal from another source or from a suitable time delay network, the valve opens fully. On release of the pilot pressures, the valve closes first and then opens the downstream vent.

3,741,246

STEAM TURBINE SYSTEM WITH DIGITAL COMPUTER POSITION CONTROL HAVING IMPROVED AUTOMATIC-MANUEL INTERACTION

Andrew S. Braytenbah, Pennsauken, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1970, Ser. No. 80,710
Int. Cl. G05b *15/00*
U.S. Cl. 137—624.11 **12 Claims**



An improvement in the operation of an electric power plant utilizing a steam turbine controlled, in an automatic mode, by means of a digital computer, is accomplished by simplifying the interaction between the programmed automatic process control and the manual backup control. The position setpoint for each of a plurality of valves in the system to be controlled is established as a direct digital holding function in a respective bistable relay register. In addition, a single valve control holding register is provided which is coupled to all of the valve position controls in parallel. Automatic operation is then possible in either single valve or programmed sequential valve modes, and the programmed interaction to accomplish switching from manual to automatic control is simplified by updating the automatic control status until the single valve holding register has a setting equal to the manual control representation before consummating the manual to automatic switching. The direct digital holding registers also improve total system operation in eliminating drift with respect to the valve positions represented so as to extend the period of reliable operation in the manual mode, and also make it possible to retain the last valid position setpoints held in the respective registers prior to a computer power failure.

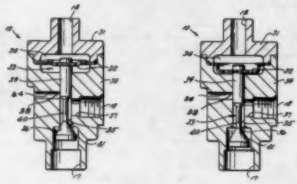
3,741,247

FLUIDIC PRESSURE AMPLIFIER

Herbert H. Kaemmer, Whippany, N.J., assignor to Automatic Switch Company, Florham Park, N.J.

Filed Dec. 10, 1971, Ser. No. 206,844
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.66 **9 Claims**

A fluidic pressure amplifier comprising a body having a logic port for receiving a fluidic signal from a fluidic logic control circuit, an inlet port for connection to a source of fluid pressure higher than the pressure of the logic signal, an outlet port for connection to an interface device which controls fluid at a still higher working pressure, and an exhaust port. The body also includes a bore with which the inlet, outlet, and exhaust ports communicate, a valve seat between the inlet port and one end of the bore, and an opening in the bore wall communicating with the exhaust port. A unitary valve element includes a spool snugly but slidably arranged within the bore, a valve disk axially spaced from the spool, and a reduced diameter rod interconnecting the spool and disk. A diaphragm is connected to the end of the spool opposite the disk and is exposed to pressure at the logic port. This latter pressure urges the spool into a position wherein it covers the opening in the bore wall and separates the disk from the valve seat, whereby the inlet and outlet at the inlet port urges the spool into a position wherein it uncovers the opening and the disk engages the valve seat, whereby the outlet and exhaust ports communicate, but not the inlet and outlet ports.

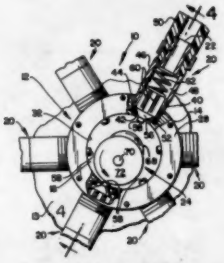


3,741,248

ROTARY SELECTOR VALVE MECHANISM

Frederick F. Stevens, Jr., Fairfield, Conn., assignor to Hoff-Stevens, Inc., Ansonia, Calif.

Filed June 25, 1971, Ser. No. 156,881
Int. Cl. F16k *19/00*
U.S. Cl. 137—627 **4 Claims**



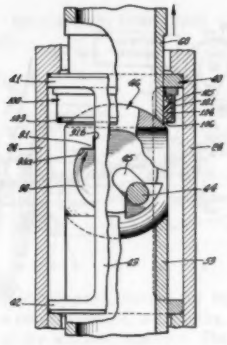
A rotary selector valve mechanism having a housing defining a generally cylindrical fluid chamber and including a fluid outlet port communicating with the chamber. A circumaxial series of inlet valves mounted on the housing each include an inlet port and a valve element movable between opened and closed positions and biased to closed position to prevent passage of fluid from the inlet port to the chamber. A rotary crank mechanism journalled for coaxial rotation relative to the fluid chamber is adapted for selective angular positioning relative to the valve elements to retain a selected one of the valve elements in its open position whereby a fluid flow path is provided from the inlet port associated with the one inlet valve to and through the chamber to the outlet port. Positioning of the crank mechanism is remotely controlled by a servo mechanism which includes a rotary selector switch.

3,741,249

BALL VALVE WITH RESILIENT SEAL

Kurt Leutwyler, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Mar. 22, 1971, Ser. No. 236,929
Int. Cl. F16k *11/20*
U.S. Cl. 137—629 10 Claims



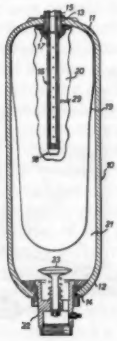
A ball valve is incorporated in a subsurface shutoff valve for wells. The ball valve is actuated rotatively and longitudinally within its support and effects sealing engagement with a stationary resilient seal by longitudinal movement.

3,741,250

PRESSURE VESSEL

Jacques H. Mercier, 49 rue de Naples, Paris, France

Filed Oct. 5, 1971, Ser. No. 186,704
Claims priority, application France, Oct. 28, 1970, 7038833
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 5 Claims



This invention relates to a pressure vessel comprising a rigid container having two ports, a flexible separator in the form of a bladder being disposed in the interior of said container and dividing it into two fluid chambers which are respectively in communication with said ports, and a guide or flow member in the general shape of a hollow column is fixed at one of its ends to the container at one of the ports thereof and extends axially inward into the container, the flow member being adapted to permit an appropriate flow of fluid in two directions and having a perforated tubular central member and an encompassing permeable sleeve formed from a stack of juxtaposed grooved washers which at least partially enclose the tubular member and which is retained between two terminal abutments.

3,741,251

COUPLING FOR MOULDED TUBULAR COMPONENTS

Clive Rees, Tyseley, Birmingham 11, England, assignor to Girling Limited, Birmingham, England

Filed Feb. 25, 1971, Ser. No. 118,922
Claims priority, application Great Britain, Mar. 3, 1970, 10,104/70
Int. Cl. B65d *59/04*
U.S. Cl. 138—96 4 Claims

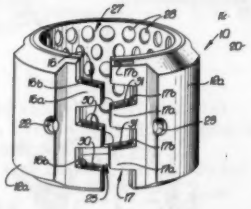
An internal undercut groove or recess in a moulded tubular component is formed by two axially spaced rows of integral projections, the projection of each row registering with the space between adjacent projections in the opposite row. The component can thus be made without the use of a collapsible core tool. The invention also relates to a novel injection moulding core tool in two axially separable parts having interengaging axial projections of generally castellated form.

3,741,252

PIPE PROTECTOR

Fred D. Williams, Long Beach, Calif., assignor to Hydrill Company, Los Angeles, Calif.

Filed Sept. 14, 1971, Ser. No. 180,380
Int. Cl. F16l *11/00*
U.S. Cl. 138—110 9 Claims



A well pipe protector comprises:

a. a C-shaped body including a metallic core and a rigid plastic sheath attached to the core and extending outwardly therefrom,

b. non-metallic terminals in the body to be drawn together in interfitting relation for retention after lateral application of the body about the pipe, and

c. elastomer insert means carried at the inner side of the body to be compressed between the body and pipe in response to said drawing together of the terminals.

3,741,253
LAMINATES OF ETHYLENE VINYL ACETATE POLYMERS AND POLYMERS OF VINYLIDENE CHLORIDE

Harri J. Brax; Joseph F. Porinchak, both of Spartanburg, and Alan S. Weinberg, Greenville, all of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

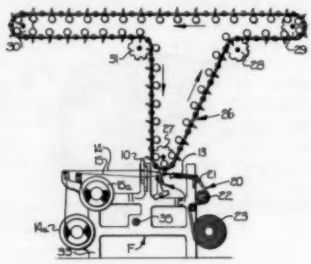
Filed Mar. 30, 1971, Ser. No. 129,501
Int. Cl. B32b *27/30, 27/38;* B65b *25/06*
U.S. Cl. 138—137 4 Claims

A multiply laminate useful as a packaging film having a first layer of a cross linked ethylene vinyl acetate polymer, a directly joined middle layer of a polymer of vinylidene chloride and a third layer directly joined to the middle layer of an ethylene/vinyl acetate polymer. Especially preferred for the middle layer are blends of emulsion polymerized and suspension polymerized vinylidene chloride and an epoxy resin.

3,741,254
METHOD AND APPARATUS FOR WEAVING PILE FABRICS

Eugene F. Clark, deceased, late of Eden, N.C. (by Ursa W. Clark, administratrix), assignor to Fieldcrest Mills, Inc., Eden, N.C.

Filed Nov. 3, 1971, Ser. No. 195,171
Int. Cl. D03d *39/02*
U.S. Cl. 139—2 19 Claims

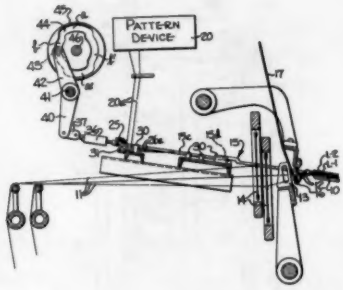


In the weaving of pile fabrics on an Axminster loom equipped with an endless conveyor means on which spool carrying tube frames are mounted with pile yarns extending through a row of tubes on each frame, the tube frames cooperate with the loom reed and weft inserting means in an improved manner according to this invention to position each successive row of tubes between the warps incident to the forming of tufts from the respective pile yarns without displacing the conveyor means from its normal path of travel or removing the successive tube frames from the conveyor means, and without displacing the tubes relative to the tube frames.

3,741,255
POSITIVE PILE WIRE MOTION FOR PILE FABRIC TEXTILE MACHINES

Carl Edward Ostler, Eden, N.C., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Filed Feb. 9, 1972, Ser. No. 224,823
Int. Cl. D03d *39/20*
U.S. Cl. 139—46 14 Claims

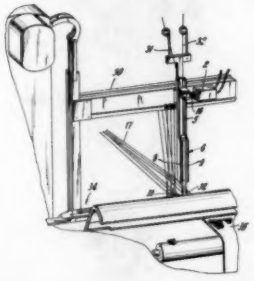


Positive means shifts selected pile wires forwardly and rearwardly to present loop forming stages of different heights thereon to means for looping pile yarns over the pile wires on a machine for forming pile fabrics.

3,741,256
DEVICE FOR THE PRODUCTION OF INTERMEDIATE SELVAGES IN FABRIC WEBS

Bernhard Wesseler, Vreden, Domern, Germany

Continuation-in-part of Ser. No. 883,455, Dec. 9, 1969, abandoned. This application Dec. 28, 1971, Ser. No. 212,938
Int. Cl. D03d *47/40*
U.S. Cl. 139—54 6 Claims



The device includes a tubular shaft cut open in its central portion to form a guide for the warp thread or threads passing through the open portion of the tubular shaft. The tubular shaft forms a support for a pair of oscillatable shafts extending toward each other, and each carrying a pair of needles so that the two pairs of needles face in opposite directions. The needles of a pair are arranged on respective opposite sides of a plane passing through a warp thread of a loom and perpendicular to the fabric web, and the device moves up and down in synchronism with the shed movement of the loom. The shafts oscillate the needles in the plane, relative to the warp thread, to form the selvage.

3,741,257

ADJUSTER IN THE CONNECTION PATH BETWEEN A SHED-FORMING DEVICE AND A HEDDLE FRAME

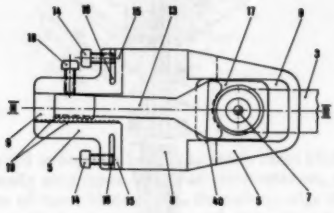
Walter Gustav Kleiner, Wadenswil, and Ernst Josef Hoenig, Horgen-Zurich, both of Switzerland, assignors to Staubli AG, Horgen-Zurich, Switzerland

Filed Sept. 22, 1971, Ser. No. 182,633

Claims priority, application Switzerland, Sept. 25, 1970, 14257/70

Int. Cl. D03c *1/00, 13/00*

U.S. Cl. 139—66 R 14 Claims



A connecting and adjusting device for insertion into the linkage between a control device, as a dobby, and the heddles or heddle frame of the weaving machine. The connecting and adjusting device is insertable between an oscillating lever constituting the output of a dobby and a reciprocable rod connecting same to the input of the lift mechanism for heddle frames of a loom. Said device comprises a body structure having slots therein at substantially right angles to each other. One slot is for the reception of one arm of said lever. In the other slot there is located in same embodiments a loosely positioned slideable bearing block. Said bearing block carries a bearing therein to which is connected the driving end of said connecting rod. An arm projects rigidly from said bearing block and means are provided cooperable with said arm for displacing it from a position in center alignment with said slot. Such displacement affects a jamming of the bearing block within said slot and thereby removing any play which might otherwise exist between said bearing block and the walls of said other slot. Supplemental means may be provided if desired, such as interengaging teeth, for further rigidifying the relationship between said arm or said bearing block and the body portion of said device. Alternatively threaded means may be provided for precisely adjusting the position of a snugly but slidably mounted bearing block within said second slot, which can thus accomplish the desired adjusting without the offsetting and jamming relationship above mentioned.

The connection which transfers the movements of a shed-forming device, for example a dobby, onto the associated heddle or the heddle frame of a weaving machine must operate without play, namely on one hand so that the controlled movements are carried out immediately and accurately and on the other hand so that a deflection of the joints does not occur which would lead to cumulative inaccuracies in the sequence of motions. To build the connection of any desired thickness is, however, not possible since the available room is limited by the thickness of the heddle frames which lie side-by-side. In addition, this connection must permit a limited adjustment of the reciprocal position since the shed-forming device is an attachment for a weaving machine and the heddle frames must be adjusted with respect thereto.

3,741,258

GRIPPER SHUTTLE

Vladimir Svaty, Liberec, Czechoslovakia, assignor to Elitex Zavody Textilniho Strojirenstvi Generalni reditelstov, Liberec, Czechoslovakia

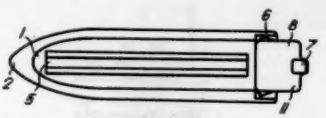
Filed Sept. 2, 1971, Ser. No. 177,352

Claims priority, application Czechoslovakia, Sept. 4, 1970, 6076/70

Int. Cl. D03d *47/24*

U.S. Cl. 139—125 6 Claims

A gripper or gripper shuttle for the insertion of weft threads which includes an assembly of elements comprising a flat beam having a spur and a flat spring which is disposed in the hollow of a plastic gripper body, the flat beam being provided



with barbs to prevent the elements from coming out of the hollow.

3,741,259

CURTAIN HEADING TAPE

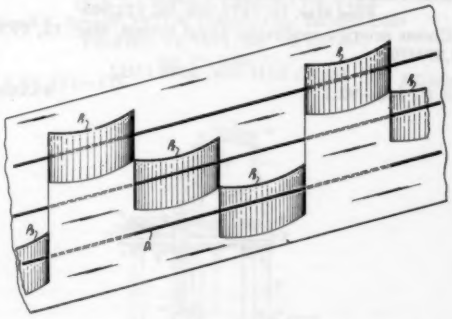
William Wood, Gatley; Mary Griffiths, Heywood, and John Sellers, Chorley, all of England, assignors to Thomas French & Sons Limited, Manchester, England

Filed Jan. 18, 1971, Ser. No. 107,228

Claims priority, application Great Britain, Jan. 28, 1970, 4,066/70

Int. Cl. D03d *1/06*

U.S. Cl. 139—387 A 5 Claims



A curtain heading tape for use with draw curtains or the like, the tape having pockets on one face and at least three draw cords in the tape. The pockets are spaced in rows at different transverse distances from the edges of the tape, whereby the tape can be attached to a curtain at different specific heights of the curtain above the level of the suspension hooks.

3,741,260

POLYESTER MEAT SHROUD

Witold R. Kocay, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed June 23, 1971, Ser. No. 156,061

Int. Cl. D03d *15/00*

U.S. Cl. 139—420 R 5 Claims

Nonswelling nonwicking meat shrouds of high tenacity polyethylene terephthalate staple fibers with inherently low moisture regain provide superior conductivity while conditioning meat carcasses in the chilling stages without excessive dehydration.

3,741,261

WIRE TERMINATING APPARATUS

Meredith M. Windsor, Elk Rapids, and Ronald D. Heller, Traverse City, both of Mich., assignors to D-D-D Engineering & Service Corp., Elk Rapids, Mich.

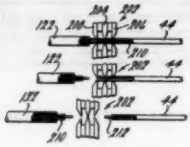
Filed Oct. 8, 1971, Ser. No. 187,651

Int. Cl. B21f *21/00*

U.S. Cl. 140—1 9 Claims

An apparatus for delivering an insulated wire to a clamping station, measuring a predetermined length, and then cutting

and stripping the wire. The apparatus facilitates the manufacture of wire harnesses and the like by providing for automatic



measurement of a wire, cutting the wire and then stripping the wire on both sides of the resultant cut, and delivery of the cut pieces to clamps on a conveyor for further processing.

3,741,262

MANUFACTURE OF BEAD WIRES FOR TYRES

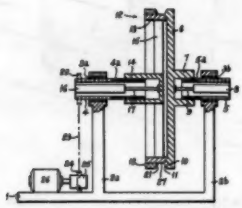
Robert Graham Bell, Hartlebury, England; James Edward Collins, and Gwylfa George Griffiths, both of Swansea, Wales, assignors to National Standard Company Limited, Kidderminster, Worcestershire, England

Filed Mar. 10, 1971, Ser. No. 122,905

Claims priority, application Great Britain, Mar. 12, 1970, 11,894/70

Int. Cl. B21f *3/04*; B29h *17/32*

U.S. Cl. 140—92.2 **4 Claims**



In a machine for manufacturing a tire bead wire or bead strip comprising a rotatable, circular former provided with a peripheral recess, the former is divided into two parts capable of being moved relative to one another in the direction of the axis of rotation of the former, each of these parts comprising a part of the wall of said peripheral recess. Preferably, when the two parts are separated a clear axial gap exists between the parts so that a completed bead wire or strip can drop from the former between the two separated parts.

3,741,263

CONTAINER FILLING MACHINE NOZZLE

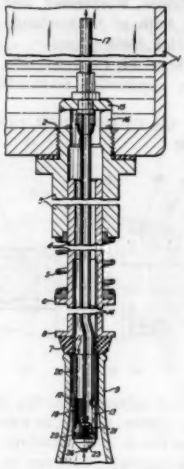
Chester E. Waxlax, Moon Township, Pa., assignor to Horix Manufacturing Company, Pittsburgh, Pa.

Filed Aug. 27, 1971, Ser. No. 175,515

Int. Cl. B65b *3/00*

U.S. Cl. 141—59 **3 Claims**

Subatmospheric pressure is maintained above the liquid product in the tank of a container filling machine. A vent tube extends up through an outlet in the bottom of the tank and above the liquid level. At the lower end of the tube there is a hollow valve plug that is open at its upper end and has a liquid outlet port and an air inlet port in its side. The lower end of the vent tube communicates with the air inlet port. Surrounding the vent tube and valve plug and normally closing the two ports is a filling tube, the upper end portion of which is slidably mounted in the tank outlet for receiving liquid from it. This tube is slidable upwardly on the valve plug to uncover the two ports. The valve plug also has a passage extending downwardly from its inlet port so that air can enter the vent tube while the ports are closed. Disposed in this passage is a



check valve for closing it against downward liquid flow whenever the upper end of the vent tube is exposed to atmospheric pressure.

3,741,264

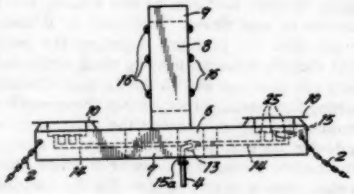
FLOATING STRUCTURE FOR UNLOADING LIQUID CARGO

Yoshiaki Kinoshita, Yachiyashi, Chiba, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Mar. 8, 1972, Ser. No. 232,844

Int. Cl. B65b *1/04*; B63b *35/44*

U.S. Cl. 141—383 **3 Claims**



A floating structure for unloading liquid cargo submergible by ballast water and by winding a rope secured to the sea bottom and providing with unloading pump means, connection ports to be engaged with the ship bottom opening for sucking liquid cargo from the cargo ship, and a connecting end to be connected to the equipment on the land. The floating structure has an upright portion having a maneuvering house.

3,741,265

PENCIL SHARPENER

Viola-Nereida Gutierrez Nochea, New York, N.Y., assignor to Jose Materno Gutierrez Y. Zerquera, New York, N.Y.

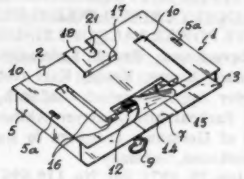
Filed June 15, 1971, Ser. No. 153,193

Int. Cl. B26b *3/00*

U.S. Cl. 145—3.61 **5 Claims**

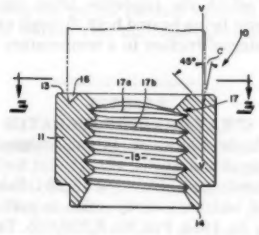
The present invention relates to an improved pencil sharpener which is constructed from sheet metal material suitable for punching and forming in high speed machine press, such as a punch press. In this manner an economical holder is manu-

factured for the used razor blades, since the holder has pressure means suitable for holding a blade in such a position that the edge assumes the correct angle with respect to the hollow cone in which the end of the pencil is turned. The blade holding means may be varied insofar as the dimensions and shapes



are concerned in order to be able to retain razor blades of the more normally used types. Under all circumstances, whatever be the type of razor blades used, the cutting edge should always assume the correct position with respect to a slot provided along a generatrix of the hollow cone.

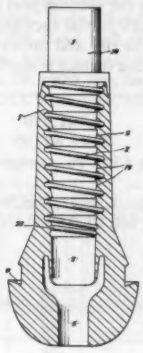
3,741,266
PREVAILING TORQUE LOCKNUT
Robert Adam Frailly, Massillon, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Nov. 22, 1971, Ser. No. 200,959
Int. Cl. F16b *39/30*
U.S. Cl. 151—21 B **2 Claims**



An all-metal prevailing-torque locknut having two substantially equally spaced, arcuate indentations in its top endface. The endface indentations displaces the two adjacent circumferentially aligned internal threads both radially inwardly and axially downwardly and also give the adjacent threaded bore an ovular configuration.

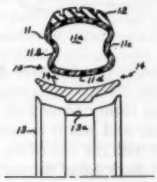
3,741,267
VALVES FOR TUBELESS TIRES
Stephen Ernest William Thacker, Erdington, Birmingham, England, assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Sept. 22, 1971, Ser. No. 182,691
Claims priority, application Great Britain, Sept. 25, 1970, 45,783/70; Apr. 20, 1971, 10,270/71; July 29, 1971, 35,775/71
Int. Cl. B60c *29/00*
U.S. Cl. 152—427 **13 Claims**

A valve for a tubeless tire including a tubular insert adapted to accommodate a valve core, a resilient stem having an axial bore for receiving a portion of the tubular insert and a hard radially expandable member integral with the stem which con-



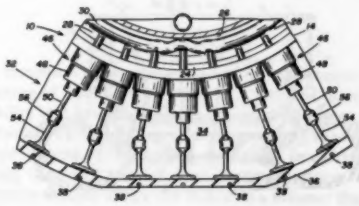
stricts the axial bore of the resilient stem to grip projections on the surface of the insert.

3,741,268
QUICK CHANGE PNEUMATIC TIRE
Howell K. Brewer, 1921 N. Longview St., Dayton, Ohio
Filed Dec. 14, 1971, Ser. No. 207,849
Int. Cl. B60c *7/12*
U.S. Cl. 152—175 **8 Claims**



A vehicular tire having integral tread and carcass portions molded into a closed, toroidal configuration and further formed into a convoluted shape, when uninflated, both for providing and facilitating its stretching over the outside diameter of a mounted wheel, and for positively controlling and urging movement of the carcass-inside diameter in an inward contracting direction only to a gripping position with either the specially contoured wheel rim or adapter ring element mounted thereto.

3,741,269
TRACTION INCREASING SYSTEM
John F. Bryan, Jr., 3212 Mapleleaf Circle, Dallas, Tex.
Filed Oct. 4, 1971, Ser. No. 186,080
Int. Cl. B60c *1/00*
U.S. Cl. 152—208 **14 Claims**



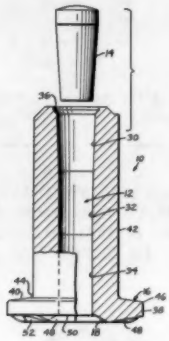
A vehicular wheel assembly includes a tire comprising circumferentially spaced segments each including a vacuum

port. A plurality of valving assemblies are mounted within the tire for actuation upon inward deflection of the tire to connect a vacuum source to each vacuum port when the segment of the tire incorporating the vacuum port is in engagement with a surface. By this means a partial vacuum is maintained between the contact area of the tire and the surface whereby traction between the tire and the surface is markedly increased.

3,741,270
TIRE STUD

Rolf J. Cantz, Grove City, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Mar. 2, 1971, Ser. No. 120,210
Int. Cl. B60c *11/16*
U.S. Cl. 152—210 **8 Claims**

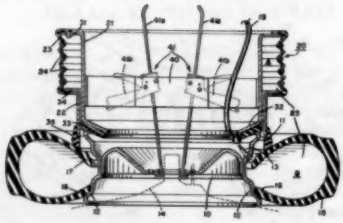


The specification discloses a tire stud having a body with a hard wear resistant pin mounted an axial bore in the body thereof and protruding from one end of the body. The body has a head on the other end and is mounted in the tread of a tire head end foremost with the end of the stud from which the pin protrudes about at the level of the surface of the tire tread or projecting slightly therefrom. The stud according to the present invention is particularly characterized in that the pin moves axially into the stud body as the stud wears thereby controlling the amount of the pin of the stud which protrudes from the end of the stud body. The bore in the stud body in which the pin is seated has a portion at the pin end with a first taper, an intermediate portion with a second and smaller taper and a final portion with substantially no taper.

3,741,271
TIRE BEAD SEALING AND SEATING DEVICE

Joseph H. Ross, Shaker Heights; William A. Weinkamer, Mentor; Laddie J. Pesek, Garfield Heights, and John F. Havel, Beechwood, all of Ohio, assignors to Gould Inc., Chicago, Ill.

Filed May 24, 1971, Ser. No. 146,226
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.1 **9 Claims**

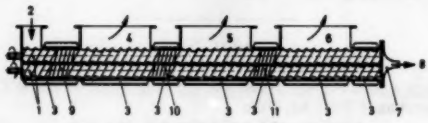


There is presented a sealing device for seating the beads of a tubeless tire against the rims of a wheel in order that the tire may be inflated. The device comprises a double-walled cylindrical chamber which rests on and seals against a rim of the wheel and the side wall of the tire, forming with the rim and tire a sealed compartment into which air under pressure is admitted to force the tire beads against the rims of the wheel.

3,741,272
PROCESS FOR THE PRODUCTION OF SPONTANEOUSLY CROSS-LINKING HIGHLY REACTIVE POWER LACQUER BINDERS

Martin Ulrich, Leverkusen; Rudolf Erdmenger, Bergisch-Gladbach; Heinrich Kunze, Koeln; Karl Nothen, Leverkusen; Hansgunter Appel, Bergisch-Gladbach, and Frank Wingler, all of Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 28, 1971, Ser. No. 110,696
Claims priority, application Germany, Mar. 7, 1970, P 20 05 691.1
Int. Cl. B01d *1/28, 1/22*; C08c *11/36, 11/24*; C08f *15/40*; C08g *51/36*
U.S. Cl. 159—2 E **7 Claims**

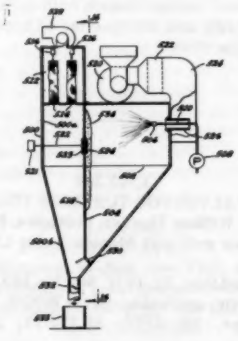


Solvent-free spontaneously cross-linking highly reactive acrylic resins being crosslinkable through N-methylolether groups for powder coatings with a softening point of from 75° – 110° C are obtained from their solutions by continuous concentration through evaporation in a self-cleaning screw evaporator in which the residence times are from 2 to 6 minutes, the resin being heated both through external heating and through internal friction to a temperature not exceeding 120° C.

3,741,273
SPRAY DRYING APPARATUS

Reginald E. Meade, Stillwater, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Continuation-in-part of Ser. No. 13,501, Feb. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 553,101, May 26, 1966, Pat. No. 3,520,066. This application Aug. 10, 1971, Ser. No. 170,535
Int. Cl. B01d *1/16*
U.S. Cl. 159—4 R **12 Claims**



Apparatus for drying fluids containing dissolved or suspended material composed of a spray chamber, a spray nozzle, a forminous element such as a screen positioned to

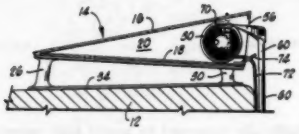
receive the spray while the droplets are in a tacky condition to form a mat on the screen and a blower for drawing air from the enclosure through the mat and thence through the screen to dry the mat.

3,741,274

AWNING MOUNTING STRUCTURE

Hugh A. Youngblood, Jr., 3225 N. Virginia, Oklahoma City, Okla.

Filed Jan. 28, 1971, Ser. No. 110,393
Int. Cl. E04f *10/06*
U.S. Cl. 160—23 R 2 Claims



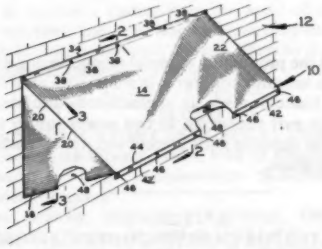
A V-shaped housing which includes convergent top and bottom plates, and substantially parallel end plates, which end plates receive and journal opposite ends of a shaft upon which an awning is rolled. Keyed to the shaft inside the housing is a pulley having a rope wound thereabout for reeling the awning upon the shaft. The housing is supported on legs so that the bottom wall of the housing inclines downwardly when the housing is mounted on the roof of a camper vehicle or the like to cause air flowing beneath the bottom wall of the housing to be directed downwardly adjacent the rear of the vehicle. This partially alleviates the partial vacuum adjacent the rear of the camper vehicle during over-the-road operation at relatively high speed.

3,741,275

AWNING

Nathan Greenspan, 2647 Polk, Hollywood, Fla.

Filed July 31, 1972, Ser. No. 276,664
Int. Cl. E04f *10/10*; E06b *7/28*
U.S. Cl. 160—58 12 Claims



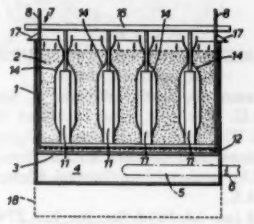
A self-supporting awning in which thermal insulation in panel means of the awining serve both to keep heat from building up underneath the awning and to make the awning self-supporting. The awning includes a rectangular panel and two triangular side panels hinged to opposte sides of the rectangular panel so that the side panels will hold the rectangular panel in a raised awning position. The side panels are foldable against the rectangular panel so that it can be placed against and directly over a window in a wall surface.

3,741,276

METHOD OF MAKING SHELL-MOULDED ARTICLES THEREFOR

John Fallows, Turbridge Wells, Kent, and John Edward Worthington, Tonbridge, Kent, both of England, assignors to Polygram Casting Co., Limited, Kent, England

Filed Nov. 30, 1970, Ser. No. 93,699
Int. Cl. B22c *3/00*, *9/00*
U.S. Cl. 164—72 12 Claims



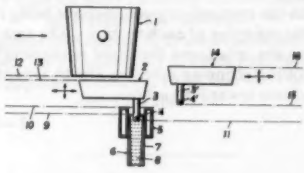
Method of making shell-moulded articles comprising passing a fluidizing gas through a bed of refractory granular material to fluidize the latter, effecting a reduction, relative to the permeability of the fluidized bed, of the permeability of the shell mould to the fluidizing gas to a value sufficiently less than the permeability of the fluidized bed to substantially ensure that the gas does not pass through the mould in preference to the bed, immersing the mould in the bed to a depth such that, on collapse of the fluidized bed, the mould is supported by the refractory material with the downgate of the mould clear of the surface of the material, collapsing the bed by ceasing to pass fluidizing gas through it, pouring the mould, restoring the passage of fluidizing gas through the refractory material to fluidize the latter, and removing the poured mould from the bed.

3,741,277

PROCESS FOR CONTINUOUSLY OPERATING A CONTINUOUS CASTING PLANT

Ernst Bachner, and Walter Fortner, both of Linz, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Dec. 13, 1971, Ser. No. 207,481
Claims priority, application Austria, Dec. 14, 1970, A 11,205/70
Int. Cl. B22d *11/10*
U.S. Cl. 164—82 4 Claims



The invention relates to a process for continuous continuous casting of liquid metals wherein a series of melts are cast from ladles into an exchangeable tundish wherefrom the metal runs into a water-cooled mould via a casting tube extending into said mould. The tundish exchange is carried out by removing the worn tundish from casting position, moving a new, empty tundish above the mould in a manner that its casting tube extends in to the mould, driving a ladle containing hot liquid metal above the tundish and filling the new tundish when it is in casting position. While the tundish is being exchanged the casting level in the mould is lowered to a posi-

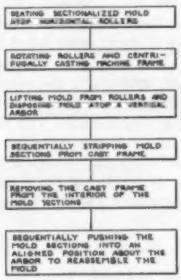
tion below the outflow opening of the casting tube and is kept there until metal runs from the new tundish into the mould. This is preferably achieved by reducing the drawing out speed of the cast bar. By using an empty tundish it becomes possible to exchange the tundishes immediately. Furthermore, the yields and operational safety are greatly increased by the invention.

3,741,278

AUTOMATED METHOD OF MANUFACTURING FINNED MACHINE FRAMES

Frederick W. Baumann, Scotia; William R. Smith, Ballston Lake; Robert G. MacNary, Elnora; Albert R. Miller, Albany; William W. Pangburn, Delanson; George M. Rosenberry, Jr., Elnora, and Bernard C. Kaczkowski, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,279
Int. Cl. B22d *13/02*
U.S. Cl. 164—114 **5 Claims**


SEATING SECTIONALIZED MOLD ATOP HORIZONTAL ROLLERS
ROTATING ROLLERS AND CENTRIFUGALLY CASTING MACHINE FRAME
LIFTING MOLD FROM ROLLERS AND DISPOSING MOLD ATOP A VERTICAL ARBOR
SEQUENTIALLY STRIPPING MOLD SECTIONS FROM CAST FRAME
REMOVING THE CAST FRAME FROM THE INTERIOR OF THE MOLD SECTIONS
SEQUENTIALLY PUSHING THE MOLD SECTIONS INTO AN ALIGNED POSITION ABOUT THE ARBOR TO REASSEMBLE THE MOLD

A highly automated method of centrifugally casting large diameter finned dynamoelectric machine frames is described utilizing a sectionalized mold which is automatically dismembered and reassembled subsequent to casting. The sectionalized mold is provided with large circular wheels at opposite ends of the mold and the wheels are placed atop substantially horizontal rollers which transmit rotary torque to the mold during centrifugal casting. Subsequent to casting, the mold is lifted vertically from the rollers and placed in a vertical disposition atop the arbor of a mold stripping machine whereafter sections of the mold are sequentially stripped from the cast (with the cast and stripped sections being rotated subsequent to the stripping of each section). The cast frame then is lifted from the arbor and the mold is reassembled by advancement of the stripping machine jaw to sequentially push the mold sections toward the arbor.

3,741,279

METHOD OF CASTING

Gerald S. Cole, 4839 Middlesex, Dearborn, Mich., and Gustaf F. Bolling, 24646 Winona Drive, Dearborn, Mich.

Continuation-in-part of Ser. No. 760,126, Sept. 13, 1968, Pat. No. 3,614,976. This application Oct. 4, 1971, Ser. No. 186,336
Int. Cl. B22d *13/00*
U.S. Cl. 164—114 **4 Claims**

This invention relates to a founding process involving metal alloy compositions which upon solidification precipitate at least two distinct phases simultaneously. The metallurgical structure of castings resulting from this founding process is altered by subjecting the solidifying metal to a mild angular or rotative acceleration. The direction of this angular acceleration is periodically reversed to avoid high rotational speeds. This results in an angular or rotative oscillation.

AS CAST STRUCTURE IN A GREY IRON

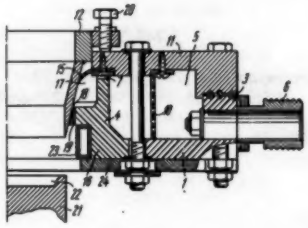
CONVENTIONAL 3.3C - 3.1 Si OSCILLATED 1.6 TIMES

3,741,280

MOULD FOR THE PRODUCTION OF METAL INGOTS

Vsevolod Rodionovich Kozheurov, O. Koshevogo, 13 kv. 8; Leonid Georgievich Berezin, ulitsa Sverdlova, 44, kv. 9; Georgy Samuilovich Safarov, ulitsa Dzerzhinskogo, 5/8, kv. 12, and Petr Lavrentievich Bulgakov, ulitsa Zhukovskogo 3, kv. 2, all of Belaya Kalitva Rostovskoi oblasti, U.S.S.R.

Filed Nov. 3, 1971, Ser. No. 195,215
Int. Cl. B22d *27/02*
U.S. Cl. 164—250 **5 Claims**



A mould for the production of metal ingots, having a casing, a shield and an inductor congruent in shape with an elongated loop, with the inductor made up of electrically insulated other parts with each part connected to two power supply sources producing in the opposite parts thereof electric currents which are in opposite phase.

3,741,281

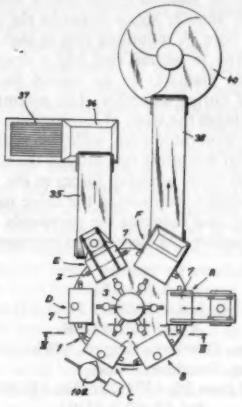
APPARATUS FOR CARRYING OUT FULL-FORM CASTING PROCESS

Hans-Ulrich Hauser-Lienhard, Watt, Switzerland, assignor to Grunzweig & Hartmann Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Apr. 13, 1971, Ser. No. 133,538
Claims priority, application Switzerland, Apr. 20, 1970, 5869/70
Int. Cl. B22d *27/16*
U.S. Cl. 164—253 **9 Claims**

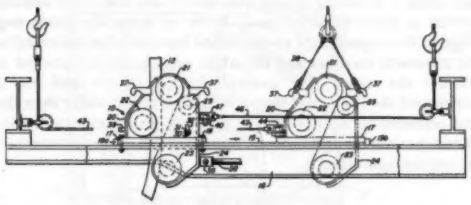
A system for casting objects in molds with patterns which are destroyed in situ, i.e. one-piece casting, in which the mold flask, box, chest or casing is formed with a perforated support

for the mold-forming material (e.g. sand) and is mounted on a turntable with other similar molds for stepping through a



number of stations. The mold is provided with means for alternately pressurizing the mold and subjecting same to suction.

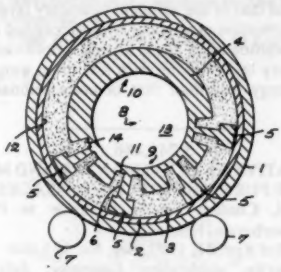
3,741,282
REMOVABLE BENDING ROLL HOUSING
Francis Gallucci, North Huntingdon Township, Westmoreland, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Nov. 27, 1970, Ser. No. 93,302
Int. Cl. B22d *11/12*
U.S. Cl. 164—282 **7 Claims**



A method and apparatus for positioning a bending roll assembly to receive a casting from the mold of a continuous-casting machine, and removing said assembly therefrom. The assembly is slidably mounted on rails, whereby it can be pulled into or out of its casting-receiving position.

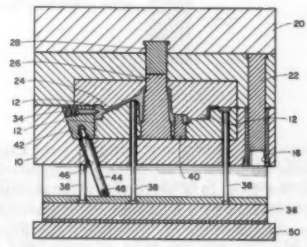
3,741,283
APPARATUS FOR CENTRIFUGAL CASTING
Josef Schroll, and Werner Sroke, both of Rostock, Germany, assignors to VEB Ingenieurburo Schiffbau, Rostock-Osthafen, Germany
Claims priority, application Germany, Oct. 16, 1970, WP 31 b²/ 150 721; Jan. 29, 1971, P 21 04 147.4
Filed Oct. 1, 1971, Ser. No. 185,654
Int. Cl. B22d *13/00*
U.S. Cl. 164—287 **5 Claims**

A method and apparatus for the centrifugal casting of articles having non-uniform mass distributions with respect to an axis of rotation; the method comprises the steps of forming a sand mold in a cylindrical centrifuge, providing cavities in the sand mold adjacent the portions of the mold surface corresponding to that portion of the article to be formed which will have a reduced mass content with respect to the portion of the article formed on the opposite side of the axis of rotation of the centrifuge; conduits connect the respective cavities to the interior of the centrifuge so that casting material introduced into the mold may be fed into the respective cavities; the cross-sectional area of the conduits is chosen to meter the



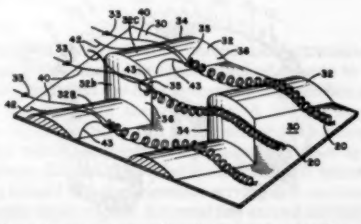
feeding of casting material into the cavities so that when the centrifuge is rotated the article being formed will be maintained in rotational equilibrium with respect to its axis of rotation.

3,741,284
DIE CASTING APPARATUS
Dalton M. Davis, Palos Verdes Estates, Calif., assignor to Pyramid Enterprises, Inc., Torrance, Calif.
Filed Oct. 22, 1971, Ser. No. 191,756
Int. Cl. B22d *29/04*
U.S. Cl. 164—347 **4 Claims**



A die casting apparatus wherein the object to be formed includes laterally located depressions within its peripheral surface. The depressions are formed by inwardly protruding elements located within the mold cavity. To effect ejecting of the molded object from the mold cavity, the protruding elements are moved laterally outward from the molded object while accomplishing the longitudinal ejecting movement of the molded object.

3,741,285
BOUNDARY LAYER CONTROL OF FLOW SEPARATION AND HEAT EXCHANGE
Arnold M. Kuethe, 490 Barton N. Drive, Ann Arbor, Mich.
Division of Ser. No. 743,350, July 9, 1968, Pat. No. 3,578,264.
This application Oct. 12, 1970, Ser. No. 79,948
Int. Cl. F28f *1/20*
U.S. Cl. 165—1 **7 Claims**



Boundary layer control for delay or prevention of flow separation and/or increase in rate of heat exchange between a

surface and a fluid by an arrangement of surface elements which may take the form of either crests or discreet concave depressions in the surface, having effective depths or dimensions of less that that of the adjacent boundary layer thickness, to cause the formation of vortices with succeeded surface elements being positioned to cause vortex amplification, for effective boundary layer mixing with less drag, weight penalty, noise, and energy loss than that of conventional vane-type generators.

3,741,286

REGENERATIVE HEAT EXCHANGER AND METHOD FOR PURGING ITS FLOW PASSAGES

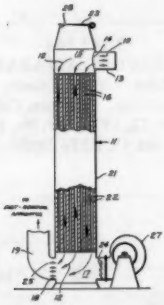
Wolf Muhlrad, Chatou, France, assignor to Prat Daniel Poelman, Courbevoie, France

Filed Apr. 21, 1971, Ser. No. 135,848

Claims priority, application Germany, July 7, 1970, P 20 35 512.8

Int. Cl. F23l *15/02*

U.S. Cl. 165—4 **6 Claims**



This disclosure teaches a regenerative heat exchanger for recovering heat from a hot dust-laden gas exhausted by a steel converter or the like. In a preferred arrangement this heat exchanger is followed by a dust-removal apparatus of known design. After passage of the hot dust-laden gas through refractory-lined flow passages of the heat exchanger for cooling the dust-laden gas and before countercurrent flow of cooling air through the flow passages for heat extraction from the refractory, the flow passages are purged by circulating purge air up one portion of the flow passages and down another portion exiting to the dust-removal apparatus. Then the circulation through the flow passages is reversed with exit still to the dust-removal apparatus. The purging is achieved by a particularly facile partition and damper arrangement.

3,741,287

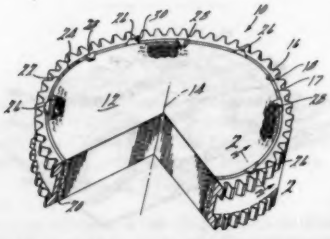
GAS TURBINE REGENERATOR ASSEMBLY AND ASSEMBLY METHOD

Jerome J. Mittman, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 20, 1971, Ser. No. 181,925

Int. Cl. F28d *19/04*

U.S. Cl. 165—8 **6 Claims**



A gas turbine regenerator assembly and assembly method are described. The regenerator assembly comprises a cylindrical regenerator core, an annular drive member surrounding the cylindrical surface of the regenerator core and separated from it to define an annular space, and a resilient material positioned in the annular space between the drive member and regenerator core. A mounting ring is also located in the annular space. The mounting ring has a discontinuity in it which permits its diameter to be varied to compress the resilient material during assembly. The assembly method of the invention includes the steps of surrounding the cylindrical surface of the regenerator core with the resilient material, placing the annular mounting ring around the resilient material and regenerator core, applying forces to the mounting ring to reduce its diameter, positioning the drive member around the mounting ring, and reducing the previously applied forces to permit the mounting ring diameter to increase.

3,741,288

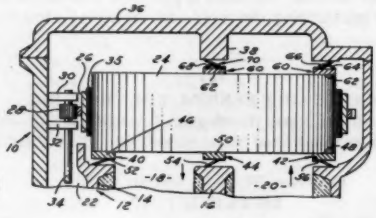
PREFORMED SEAL ASSEMBLY FOR A GAS TURBINE REGENERATOR

James K. Vallance, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 25, 1971, Ser. No. 156,673

Int. Cl. F23l *15/02*

U.S. Cl. 165—9 **11 Claims**



A crossarm member extending across the regenerator has one surface in sliding contact therewith and the other surface spaced a short distance away from an inwardly projecting ridge of the regenerator cover. A foil has one edge attached to the crossarm member and the other edge projects outward to contact the ridge. The central portion of the foil has a preformed step adjacent the welded edge and is wider than the end portions to accommodate pressure and temperature induced movement of the cover away from the regenerator during engine operation.

3,741,289

HEAT TRANSFER APPARATUS WITH IMMISCIBLE FLUIDS

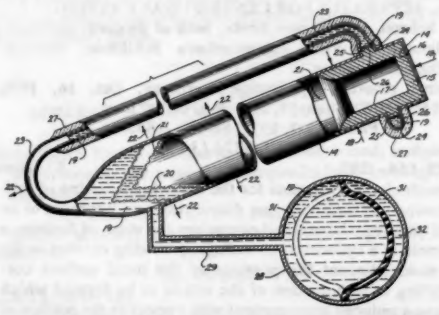
Robert David Moore, Jr., 817 W. Camino Real, Arcadia, Calif.

Division of Ser. No. 52,642, July 6, 1970, Pat. No. 3,677,336.

This application May 14, 1971, Ser. No. 143,410

Int. Cl. F28d *15/00*

U.S. Cl. 165—32 **12 Claims**



A heat transfer device, defined here as a heat link, having a capillary vaporizer adjacent a heat source, transfers heat to a

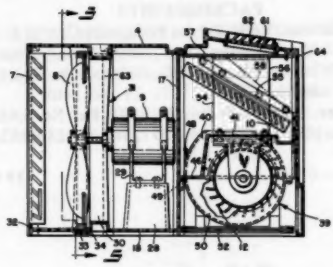
heat sink by vaporization and condensation of a heat transfer fluid within the device. A first passage is provided for conveying vapor from the capillary vaporizer to the heat sink. Another passage which is essentially a continuation of the first passage, conveys condensed liquid from the heat sink to the vaporizer, thus allowing the distance that the liquid must flow through capillary material to be quite short. Contact of the returning liquid with the surface of the vaporizer is assured by providing means for maintaining the temperature of the liquid in the return line at a sufficiently low temperature that any vapor will condense; or, alternatively, by having means for extracting any vapor formed in the returning liquid. In this manner, the heat link operates with high heat flux without any substantial resistance to liquid flow through a long capillary flow path. By thus replacing almost all of the liquid return wick, with its high resistance to fluid flow, of heat pipes with a low flow resistance liquid passage or conduit, the heat flux capacity of the heat link is greatly increased over that of the heat pipe while the quantity of porous material used and the heat link weight are considerably reduced so that a heat link typically has 10 to 1000 times the heat flux capacity of a heat pipe having the same weight. "Boosted" embodiments of the heat link employing additional means for circulating the fluid, such as vapor jet pumps, powered at least in part by vapor from the capillary vaporizer, are also described. Some "-boosted" heat links are capable of handling heat fluxes in the multi-megawatt range while having no moving parts except for check valves and the fluid itself.

3,741,290

ENCLOSURE FOR AIR-CONDITIONERS AND THE LIKE

Clarence G. Nenadal, North Kingsville, Ohio, assignor to Premix, Inc., North Kingsville, Ohio

Filed Aug. 9, 1971, Ser. No. 170,011
Int. Cl. F25d *23/08*
U.S. Cl. 165—48 **16 Claims**



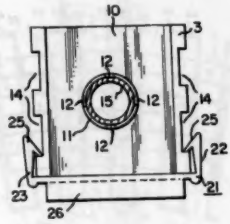
An enclosure for through-the-wall or window type air-conditioners which may include additional heating and/or humidifying means. The enclosure consists of a one-piece, molded housing or chassis for supporting the various functional elements of the unit and a top and front cover. Centrally of the chassis is a firewall which extends between a pair of laterally spaced side walls intermediate the ends thereof. Suitable mounts are provided on opposite sides of the firewall for the condenser, compressor, evaporator, and other components. Portions of the blower housings may be molded integral with or separate from the chassis and provided with suitable mounts for the evaporator fan motor. Evaporator drain pan areas molded as part of the blower housings provide fast runoff of the condensate from the evaporator. A fan motor support, channelled water pan and lower portion of the fan shroud may be molded integral with the floor member of the chassis. The upper portion of the fan shroud is molded integral with the top cover. Such an enclosure greatly reduces the number of elements heretofore required for window or through-the-wall air-conditioning housing, thus simplifying the manufacturing procedures and reducing the overall size of units of this type, and eliminating the need for decorative covers previously required.

3,741,291

SELF-ADJUSTING SUPPORT CLIP FOR FINNED TUBE BASEBOARD RADIATORS

Uri Limoni, Hauppauge, N.Y., assignor to The Slant/Fin Corporation, Greenvale, N.Y.

Filed July 21, 1971, Ser. No. 164,662
Int. Cl. F24h *9/04*
U.S. Cl. 165—55 **9 Claims**



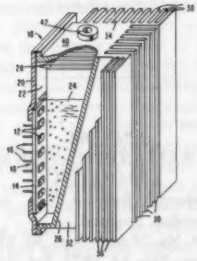
There is disclosed a support clip for a fin tube baseboard radiator assembly. The clip comprises a U-shaped member having inclined sidewalls which have inwardly extending protrusions on the top inner surface of the sidewalls for coacting with a channel or ridge formed by a plurality of fins located about a heating pipe.

3,741,292

LIQUID ENCAPSULATED AIR COOLED MODULE

Nanda Kumar G. Aakalu; Richard C. Chu, and Robert E. Simons, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,318
Int. Cl. F28d *15/00*; H01l *1/12*
U.S. Cl. 165—105 **3 Claims**

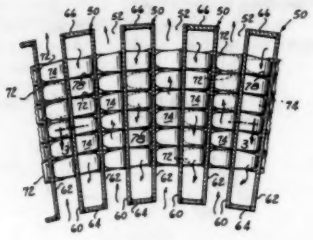


A plurality of heat generating components are mounted on a substrate which has a container attached thereto in sealed relationship such that the heat generating components are exposed to the inside of the container. A low boiling point dielectric liquid partially fills the container and completely covers the heat generating components. A vapor space is located above the liquid level which is filled with internal fins extending inward into the container serving as a condenser for the dielectric liquid vapors. External fins extend outward from the container to serve as an air cooled sink for the internal fins condenser.

3,741,293
PLATE TYPE HEAT EXCHANGER

Richard Joseph Haberski, Emerson, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Nov. 1, 1971, Ser. No. 194,136
Int. Cl. F28f *3/14*
U.S. Cl. 165—166 **9 Claims**



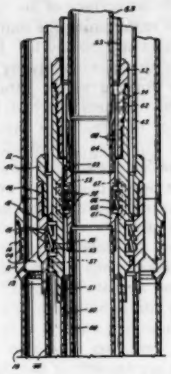
The heat exchanger of the plate-fin type comprises at least three plates, the adjacent surfaces of which have spaced rows of extended surface elements. Each of the extended surface elements are curved in a direction away from its associated plate surface. The rows of extended surface elements of the adjacent surfaces are alternately arranged and with the extended surface elements of one plate surface positioned with its curvature in juxtaposed and opposite position relative to the curvature of extended surface elements of the next adjacent row of extended surface elements. The length, spacing and curvature of the extended surface elements are correlated so that when the heat exchanger is in use, the distal end of a first extended surface element abuts the next adjacent second surface element of the opposite plate surface in the area of the point of attachment of the latter to the opposite plate and the first surface element abuts at a point spaced from its distal end the next adjacent third surface element projecting from the opposite plate at a substantially corresponding point spaced from the distal end of the said third surface element. This interlocking and abutting relationship of the extended surface elements of opposite plates provides an assembly of high structural strength for resisting the flexure of the plates toward each other under a high differential pressure across the plates.

3,741,294
UNDERWATER WELL COMPLETION METHOD AND APPARATUS

Charles Donovan Morrill, Bellaire, Tex., assignor to Courtaluds Limited, London, England

Continuation of Ser. No. 76,664, Sept. 30, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,348
Int. Cl. E21b *33/035*
U.S. Cl. 166—0.5 **45 Claims**

Extended casing method and apparatus for completing an underwater well whereby complete and continuous pressure control is maintained at the surface drilling platform. A conductor casing is installed in the floor of a body of water with a casing head and riser attached near the floor. Other casing is installed and supported at the water floor by hanger heads and having other risers extending upwardly therefrom. Pressure control equipment is installed at the upper end of one of the risers. A tubing head designed to pass through the pressure control equipment and riser to which it is attached may be lowered to the innermost hanger-head and remotely latched thereto. Orientation apparatus may be lowered into the tubing head and attached thereto. A tubing hanger and tubing may be lowered through the pressure control equipment and latched to the tubing head in an annular position determined by the

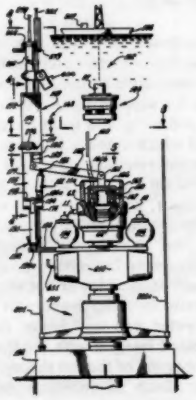


orientation apparatus. The tubing is plugged, the riser and control equipment removed and a Christmas tree assembly attached to the wellhead in fluidtight flow communication with the tubing string.

3,741,295
REPLACEMENT OF SUB-SEA BLOW-OUT PREVENTER PACKING UNITS

Fernando Murman, Palos Verdes Peninsula; George E. Lewis, Arcadia; Allen I. Dunn, Los Angeles; and Charles E. O'Brien, Whittier, all of Calif., assignors to Hydril Company, Los Angeles, Calif.

Division of Ser. No. 60,066, July 31, 1970, Pat. No. 3,662,823. This application June 14, 1971, Ser. No. 153,093
Int. Cl. E21b *33/035*
U.S. Cl. 166—.6 **19 Claims**



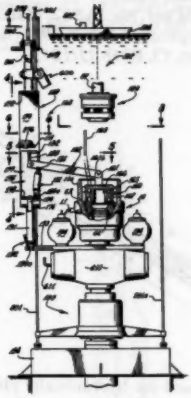
Apparatus and method to enable well blow-out preventer packer replacement at a sub-sea well head location.

3,741,296

REPLACEMENT OF SUB-SEA BLOW-OUT PREVENTER PACKING UNITS

Fernando Murman, Palos Verdes Peninsula; George E. Lewis, Arcadia; Allen I. Dunn, Los Angeles; and Charles E. O'Brien, Whittier, all of Calif., assignors to Hydril Company, Los Angeles, Calif.

Division of Ser. No. 60,066, July 31, 1970. This application June 14, 1971, Ser. No. 153,091
Int. Cl. E21b *33/035*
U.S. Cl. 166—.6 14 Claims



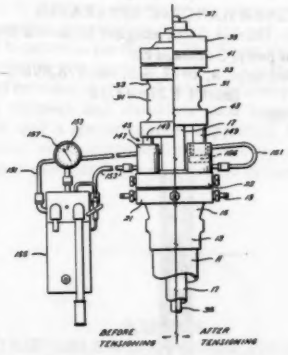
Apparatus and method to enable well blow-out preventer packer replacement at a sub-sea well head location.

3,741,297

SUBSIDENCE WELLHEAD ASSEMBLY AND METHOD

Andre H. Drouin, Houston, Tex., assignor to Rockwell Manufacturing Company, Houston, Tex.

Filed Feb. 17, 1971, Ser. No. 115,961
Int. Cl. E21b *33/03*
U.S. Cl. 166—89 2 Claims



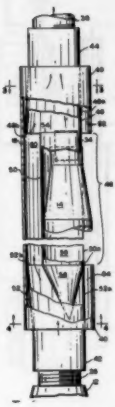
Production casing is retensioned with hydraulic jacks placed between tubing head flange and packoff flange connected to casing head flange, the production casing being screwed into tubing head and also supported in casing head by slip type casing hanger whose slips are spring biased downwardly. The packoff flange has a packing gland accessible from the top for seal replacement. The jacks are of the spring retract and fluid expand type adapted for actuation by a manual pump. A fluid pressure gage is calibrated to read in pounds of casing tension and is marked to show maximum permissible load on jacks.

3,741,298

MULTIPLE WELL PUMP ASSEMBLY

Lawrence J. Canton, 1713 N.E. 94th Street, Vancouver, Wash.

Filed May 17, 1971, Ser. No. 143,787
Int. Cl. E21b *43/00*
U.S. Cl. 166—105 14 Claims



An adapter housing for mounting an auxiliary well pump in a bore hole to supplement the production of, and act as a standby for, the main well pump. The adapter housing is mounted above the main pump in the bore hole and comprises an elongate tubular member having a diameter preferably no greater than that of the main pump. Inside the housing are a longitudinal chamber for mounting an auxiliary pump smaller than the main pump and a longitudinal bypass portion for conducting fluid under pressure upward from the main pump. The lower end of the housing is coupled with the discharge port at the top of the main pump, and the upper end of the housing is coupled with the well discharge pipe which extends to the ground surface. The two ends of the housing communicate through the bypass portion to form a continuous conduit from the main pump to the surface. The auxiliary pump chamber runs almost the entire length of the housing and has a cross section smaller than that of the housing to allow room for the bypass portion. The chamber is completely sealed from the bypass portion but is exposed to the surrounding well fluid by means of a window in the side of the housing. The small auxiliary pump mounted within the chamber draws fluid through the window and discharges it under pressure through a discharge port into the bypass portion of the housing. There the fluid mixes with and supplements the fluid discharged by the main pump, and the combined discharge of the two pumps is conducted by pump pressure to the ground surface, through the well discharge pipe. The interior of the bypass portion of the housing is provided with streamlined surfaces to minimize turbulence and is coated with a suitable material to reduce flow friction and resist corrosion. Power means are provided for running both pumps simultaneously to augment production for peak flow requirements, or alternatively for running each pump separately when lower volume is required or when one of the pumps breaks down.

3,741,299

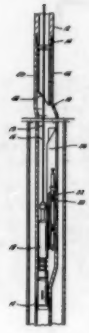
SIDEPOCKET MANDREL

Ben D. Terral, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 180,315, Sept. 14, 1971, and a continuation-in-part of Ser. No. 154,943, June 21, 1971. This application Dec. 15, 1971, Ser. No. 208,294
Int. Cl. E21b *7/06*
U.S. Cl. 166—117.5 8 Claims

A mandrel for use in a well tubing in which the mandrel body has an open bore for alignment with the well tubing and

a sidepocket offset from the open bore for receiving flow control devices, having a housing for protecting tools in the pocket, having a deflecting guide surface for preventing tools moving in the bore from catching in the mandrel, and being of an extent for receiving and guiding flow control devices into the sidepocket, being of a size to admit and guide only devices

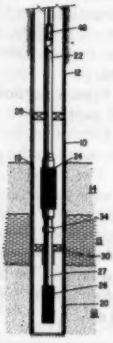


seatable in the pocket, and preventing the entrance of open bore tools into the pocket housing. A plurality of identical mandrels with orienting means in the open bore for aligning a flow control device into the housing anpocket with the guide receiving and guiding the flow control device toward and into the pocket.

3,741,300
SELECTIVE COMPLETION USING TRIPLE WRAP SCREEN

Charles S. Wolff, and Michael J. Jeansonne, Lake Charles, La., assignors to Amoco Production Company, Tulsa, Okla.

Filed Nov. 10, 1971, Ser. No. 197,241
Int. Cl. E21b *33/124*
U.S. Cl. 166—184 **3 Claims**

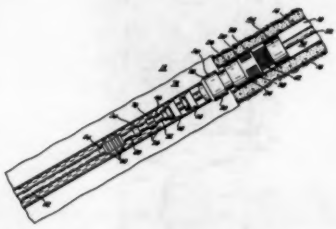


This invention relates to a completion system for a well drilled in the earth and especially for a well drilled to an oil and gas producing formation. It relates to a system for selectively producing fluid from either an upper or lower zone and for providing sand control facilities for each zone. A tubing string is suspended in a well bore and has an upper sand screen and a lower sand screen which are adjacent the upper and lower producing zones respectively. A packer is set in the annulus about the tubing between the two sand screens. An upper sleeve valve is mounted in the tubing string and is surrounded by the upper sand screen. Plug valve means are provided in the tubing string between the two sand screens. By selectively opening or closing the sleeve valve and the plug valve, production can be selectively opened from either the top or lower zones or both.

3,741,301
TOOL FOR GRAVEL PACKING WELLS

George P. Maly, Newport Beach, and Joel P. Robinson, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 16,502, March 4, 1970, Pat. No. 3,637,010. This application July 9, 1971, Ser. No. 161,023
Int. Cl. E21b *33/124*
U.S. Cl. 166—191 **9 Claims**



Apparatus is disclosed for hydraulically placing a uniform gravel pack in a well around the exterior of a perforate liner, and especially for forming uniform gravel packs in wells inclined from the vertical. The apparatus is comprised of a number of tubular members that can be axially assembled to form a stinger pipe that is attached to a conventional gravel packing tool and placed in the interior of the perforate liner during the gravel packing operation. A plurality of flexible, radial flow control baffles are slidably mounted on the tubular members so that the assembled tool is axially movable within the liner, within a limited travel, and rotatable independent of the baffles.

3,741,302
LINER HANGING APPARATUS

Henry C. Brown, Odessa, Tex., assignor to Brown Well Service & Supply Company, Odessa, Tex.

Filed Sept. 8, 1971, Ser. No. 178,596
Int. Cl. E21b *43/10*
U.S. Cl. 166—208 **15 Claims**

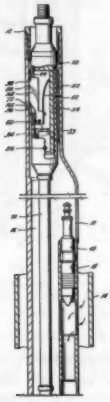
Apparatus for setting a liner pipe in a well casing including a hydraulically actuated liner hanger having a piston-cylinder

mechanism with seal means comprising two steel piston rings and a tetrafluoroethylene ring therebetween and having longitudinal protective ribs between toothed anchoring slips and extending radially at least as far as the slip teeth and including a float shoe having primary and secondary surge-type check valves to facilitate the creation of a pressure surge or pulse and actuation of the liner hanger.

3,741,303
POSITIONING TOOL

Ben D. Terral, Houston, Tex., assignor to Camco Incorporated, Houston, Tex.

Filed Nov. 17, 1971, Ser. No. 199,439
Int. Cl. E21b *23/02*
U.S. Cl. 166—214 **1 Claim**



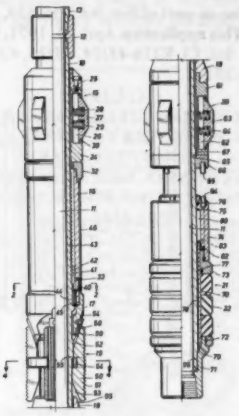
A positioning tool equipped with a pivoting locating finger which is actuated by engagement with an extended linear slot whose upper end is closed in a well tubing for placing well equipment in the precise position for setting in a well tubing thereby avoiding prematurely setting the well equipment at an undesired location in the tubing. The finger having a radial extending edge the longitudinal length of which is greater than the normal recesses in the well tubing whereby the finger may avoid the recesses and shoulders used to actuate the well equipment, and a spacer support supporting the well equipment desired to be actuated for positioning the well equipment when the locater finger engages the extended linear slot.

3,741,304
RETRIEVABLE WELL PACKER APPARATUS

Howard L. McGill, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,598
Int. Cl. E21b *23/06*
U.S. Cl. 166—216 **7 Claims**

In accordance with an illustrative embodiment of the present invention, a retrievable well packer apparatus includes a mandrel adapted for connection to a pipe string and carrying normally retracted slips that can be expanded into anchoring engagement with a well casing; a slip expander assembly on the mandrel below the slips and movable upwardly to expand the slips, and instrumentalities responsive to rotation of the mandrel by the pipe string for mechanically retracting the slips so that the slips cannot be accidentally set as the packer is being withdrawn from a well.



3,741,305
METHODS FOR OFFSHORE DRILL STEM TESTING

David E. Young, James W. Kisling, III, both of Houston, and Benjamin P. Nutter, Bellville, all of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 42,374, June 1, 1970, Pat. No. 3,662,826.
This application Aug. 25, 1971, Ser. No. 174,599
Int. Cl. E21b *47/06*
U.S. Cl. 166—250 **3 Claims**

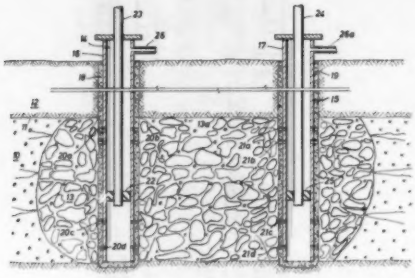
Methods for offshore drill stem testing from a floating vessel using a tester operated by upward and downward motion and coupled to a packer by a slip joint, the equipment being suspended in the well bore on upper and lower pipe string sections connected together by a slip joint. The tester and slip joints are balanced with respect to fluid pressure so that a sequence of free points observed on the rig weight indicator at the surface provides positive indications of operation of the tools.

3,741,306

METHOD OF PRODUCING HYDROCARBONS FROM OIL SHALE FORMATIONS

Michael N. Papadopoulos, Lafayette, Calif., and Russel C. Ueber, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 835,323, June 23, 1969, abandoned. This application Apr. 28, 1971, Ser. No. 138,021
Int. Cl. E21b *43/24, 43/26, 43/28*
U.S. Cl. 166—252 27 Claims



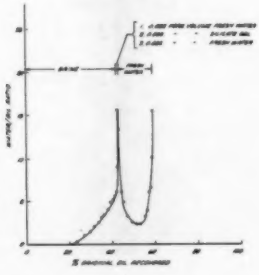
A new and improved method of producing hydrocarbons from a subterranean oil shale formation containing heat-sensitive carbonates conprising penetrating said formation with at least one well and forming a cavern therein so that communication is established between the surface and the cavern; circulating a hot fluid preferably in the upper region of the cavern to effect decomposition of the carbonates to carbon dioxide thereby causing pressure build-up resulting in fracturing and/or rubbling and enlarging the cavern upward to a desired dimension; terminating this process by injecting, preferably simultaneously, into the upper region of the cavern a cooling fluid and into the rubblized zone of the oil shale a kerogenpyrolyzing fluid to effect hydrocarbon recovery.

3,741,307

OIL RECOVERY METHOD

Burton B. Sandiford, Placentia, and Robert K. Knight, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Mar. 9, 1971, Ser. No. 122,336
Int. Cl. E21b *43/16*
U.S. Cl. 166—273 16 Claims



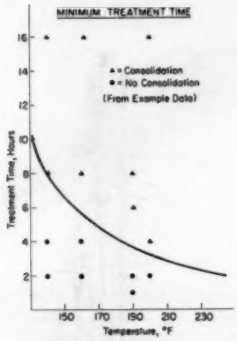
A method for treating heterogeneous petroleum reservoirs to reduce channeling of subsequently injected flooding media is disclosed wherein an aqueous polymer solution is injected into the reservoir through an injection well in an amount sufficient to penetrate into the more permeable strata of the reservoir a substantial distance from the injection well, then a liquid agent that reacts in the reservoir to form or deposit a plugging material that reduces the permeability of the formation is injected through the injection well and into the formation immediately surrounding the well so as to selectively plug the more permeable strata adjacent to the injection well. Channeling of subsequently injected flooding media is reduced, resulting in more uniform flood patterns and higher sweep efficiencies and an attendant increase in oil recovery.

3,741,308

METHOD OF CONSOLIDATING SAND FORMATIONS

Carl Veley, Dallas, Tex., assignor to Permeator Corporation, Dallas, Tex.

Filed Nov. 5, 1971, Ser. No. 195,915
Int. Cl. E21b *33/138*; E02d *3/14*
U.S. Cl. 166—292 12 Claims



Loose sand is consolidated by passing an aqueous solution of calcium hydroxide through the sand. The solution is prepared and passed in such a fashion that the sand being consolidated reacts with at least about 4.0 grams $Ca(OH)_2$ per liter of pore volume in the sand body. Following this period, an additional time of up to 350 hours may be required, during which the solution remains in contact with the sand but does not necessarily flow.

3,741,309

AUTOMATIC FIRE EXTINGUISHER SYSTEMS

Alister McCulloch, Moorabbin, Victoria, Australia, assignor to Graviner (Colnbrook) Limited, London, England

Filed Dec. 27, 1971, Ser. No. 212,289
Claims priority, application Australia, Jan. 4, 1971, 3632
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 R 5 Claims

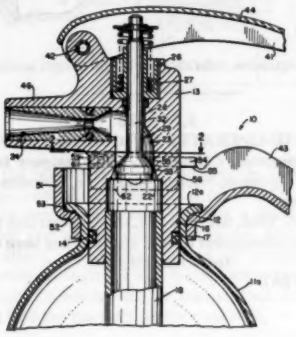
An automatic fire extinguishing system for floating roof fuel tanks comprises several extinguishant containers mounted on the floating roof, a spray pipe system mounted around the periphery of the floating roof adjacent the roof/wall seal, and

several linear fire detector elements each protecting a respective part of the roof periphery. Each element controls a respective one of the extinguishant containers and, when it detects fire conditions, causes that container to discharge extinguishant into the whole of the spray pipe system.

3,741,310
SAFETY HEAD ARRANGEMENT FOR FIRE EXTINGUISHER

Arne Hansen, New City, N.Y., assignor to Walter Kidde & Company, Inc., Belleville, N.J.

Filed Nov. 10, 1971, Ser. No. 197,286
Int. Cl. A62c *13/00*
U.S. Cl. 169—31 R **12 Claims**

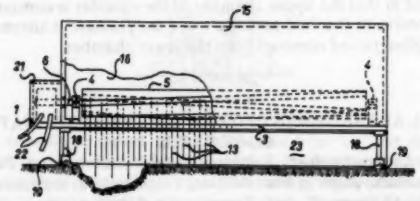


Apparatus for dispensing a fluid medium under pressure is disclosed, including a container for storing the fluid medium and having a substantially tubular neck defining an opening. A control head is mountable within the opening and is movable relative to the longitudinal axis of the container to an outer position to seal the opening and to an inner position to vent the container. The control head is interlocked with the container by means of a bayonet type connection including a pair of inwardly extending flanges on the container and a pair of outwardly extending flanges on the control head. Inwardly and outwardly extending flanges are provided with mutually engageable abutment surfaces to constrain the control head against movement relative to the container when the control head is in its outer position.

3,741,311
TOWABLE THRASHER

Rolland Fleurant, St. Jovite, Quebec, Canada

Filed Nov. 16, 1971, Ser. No. 199,296
Int. Cl. A01b *33/00*
U.S. Cl. 172—45 **2 Claims**

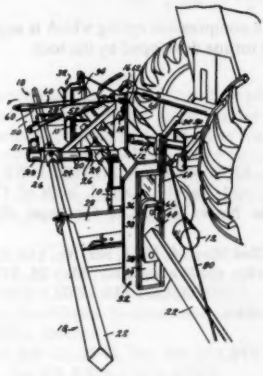


A towable thrasher adapted for comminuting ice, hardened snow and other substances spread on the ground and adapted for operation on rough terrains, such as ski slopes and fields having bushes and for operation on roads and airfields as well. A towable thrasher having a single pair of ground-engaging wheels or skis, an elongated rotary member or drum arranged for rotation about a longitudinal axis thereof overlying the ground-engaging points of the ground-engaging wheels or skis, a motor to rotate the drum, and flexible beater elements secured in spirally arranged series onto the drum to successively hit the substance on the ground upon rotation of the drum. The ground-engaging wheels or skis are adjustable in height relative to the rotary member or drum to adjust the thrashing action.

3,741,312
AGRICULTURAL APPARATUS HAVING BRACING MEANS FOR LATERALLY EXTENDING PIVOTAL FRAME SECTIONS

Rex G. Hayter, 430 Sunbeam Road, American Falls, Idaho

Filed Aug. 6, 1970, Ser. No. 61,710
Int. Cl. A01b *59/06*
U.S. Cl. 172—448 **13 Claims**



A planting, earth-working or earth-treating apparatus is provided with a plurality of frame sections which are mounted relative to a rigid support bar for limited pivotal movement about axes which extend along lines which are generally parallel to or coincident with the intended line of travel of the apparatus. The rigid support bar is of a form and configuration to be attached to standard three-point or other coupling arrangements of tractors and other prime movers. Guiding means are carried by the rigid support bar for bracing each of the frame sections to prevent unwanted rearward movement or distortion of the frame sections during forward travel of the apparatus. At the same time, the guiding means provide for limited vertical movements of the frame sections about their respective axes so that the apparatus can conform to the shape of uneven ground over which it is traveling. Power operated means are provided for individually adjusting the frame sections, as desired.

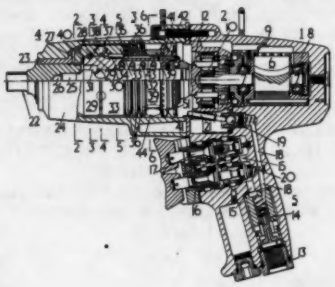
3,741,313
POWER-OPERATED IMPACT WRENCH OR SCREWDRIVER

Ronald Frederick States, London, England, assignor to Desoutter Brothers Limited, Hendon, London, England

Filed July 8, 1971, Ser. No. 160,606
Claims priority, application Great Britain, Apr. 30, 1971, 12,319/71
Int. Cl. B25b *19/00*
U.S. Cl. 173—12 **6 Claims**

A portable power-operated impact wrench, screwdriver or the like rotary tool, provided with inertia means which causes increased disengagement movement of the hammers from the anvils to interrupt the power to the tool at a predetermined

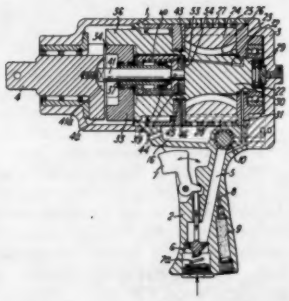
maximum torque by movement of the inertia means in a longitudinal direction of the tool away from the hammers against the action of a compression spring which is adjustable to vary the maximum torque developed by the tool.



3,741,314
PNEUMATIC SCREWDRIVER

Primo Leoni, and Isabella Cattini, both of Cavriago, Italy, assignors to Nuova L.A.P.L., Cavriago (Reggio Emilia), Italy

Filed May 24, 1971, Ser. No. 146,030
Claims priority, application Italy, May 25, 1970, 46873 A/70
Int. Cl. E21b *33/03*
U.S. Cl. 173—93.6 **2 Claims**



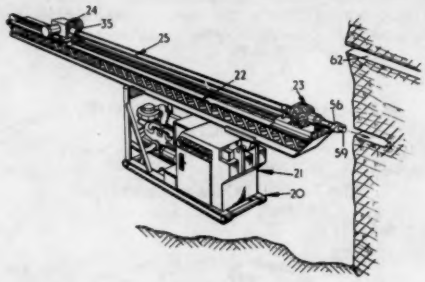
Pneumatic screwdriver comprises a rotor driven by compressed air, a weight reciprocated by compressed air and turned by said rotor, and a drive member connected to be rotated by said weight only when said weight is near one end of its reciprocating path of travel.

3,741,315
DRILLING OR CUTTING OR EARTH STRATA

Allan Richard Hilton, Westhoughton, England, assignor to Mining Development A.G., Zug, Switzerland

Filed Dec. 23, 1970, Ser. No. 101,083
Claims priority, application Great Britain, Jan. 8, 1970, 913/70; May 2, 1970, 21,221/70
Int. Cl. E21c *3/30, 13/08*
U.S. Cl. 173—105 **13 Claims**

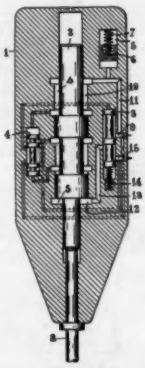
A method and device for drilling in which a tool or cutting bit is subjected to an oscillatory action. It may also be subjected to a percussive, vibratory or axial thrust action.



3,741,316
FLUID-OPERATED PERCUSSION TOOL

Remi F. Alajouanine, Clamart, France, assignor to Forges et Ateliers de Meudon, Societe Anonyme, Meudon (Hauts de Seine), France

Filed Jan. 16, 1968, Ser. No. 698,326. The portion of the term of this patent subsequent to Oct. 26, 1988 has been disclaimed.
Int. Cl. B25d *9/00*
U.S. Cl. 173—107 **2 Claims**



Percussion tool actuated by an incompressible fluid, characterized in that the upper chamber of the cylinder is constantly responsive to the fluid pressure while the pressure is alternately applied to and removed from the lower chamber.

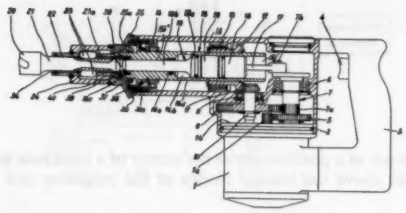
3,741,317
SEAL ARRANGEMENT FOR AN ELECTRO-PNEUMATIC ROCK DRILL

Josef Unterschweiger, Feldkirch-Nofels, Austria, and Peter Schmuck, Mauren Fuerstentum, Liechtenstein, assignors to Hilti-Aktiengesellschaft, Fuerstentum, Liechtenstein

Filed May 15, 1971, Ser. No. 142,924
Claims priority, application Germany, May 15, 1970, P 20 23 913.8
Int. Cl. B25d *11/00*
U.S. Cl. 173—109 **6 Claims**

In an electro-pneumatic rock drill an axially extending bore is formed within a cylinder contained within a housing and the

bore has a forward part which has a smaller diameter than its rearward part. A piston is reciprocably mounted in the rearward part and is spaced from the rearward end of a percussion piston which extends into the forward part of the bore. In operation, the piston transmits its reciprocating movement through the medium of an air cushion to the percussion piston which in turn drives a tool held in a holder adjacent the forward end of the bore. A seal is provided in the forward part of the bore to prevent any passage of air rearwardly through the bore along the percussion piston. Further, a space is provided at the forward end of the percussion piston when it is in its rearward position, into which filtered air is drawn and expelled forwardly through the tool holder when the percussion piston transmits its energy to the tool so that dust-laden air cannot enter into the bore within the rock drill.



3,741,318

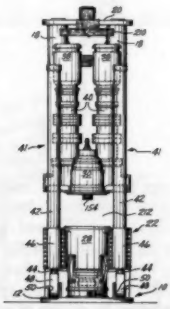
BORING MACHINE HAVING INTERNAL ACCESS FEATURE AND DISASSEMBLY METHOD

Harold T. Klein, Bellevue, and Wilson B. Porter, Seattle, both of Wash., assignors to The Robbins Company, Seattle, Wash.

Continuation-in-part of Ser. No. 75,020, Sept. 24, 1970, Pat. No. 3,695,364. This application Oct. 20, 1971, Ser. No. 190,909

Int. Cl. E21b *3/02*

U.S. Cl. 173—152 **11 Claims**



A traveling support frame is mounted for up and down travel along upstanding guide columns. Drilling equipment is carried by the traveling frame. The drilling equipment comprises a plurality of axially joined parts. The parts are constructed so that a portion of the drilling equipment can be anchored, removable connectors between two parts removed, and the traveling frame used to move the portion of the drilling equipment still attached to it away from the anchored portion. The internal components of the drilling equipment are easily removable from their housings within the access space provided when the two parts are moved apart.

3,741,319

IMPACT WRENCH HAVING TIME LAPSE CONTROL VALVE

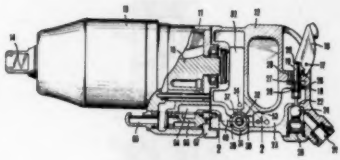
Eimatsu Kotone, Osaka, Japan, assignor to Nippon Pneumatic Manufacturing Co., Ltd., Osaka-fu, Japan

Filed June 30, 1971, Ser. No. 158,226

Claims priority, application Japan, July 20, 1970, 45/72580

Int. Cl. B25b *21/00*

U.S. Cl. 173—163 **6 Claims**



An impact wrench includes a compressed air inlet port having a valve operable with a control piece. An air passage has an exhaust port which is closed when the valve is open. A time lag valve is slidably arranged in a chamber between the air passage and an air passage communicating with the inlet port. A throttle valve regulating flow rate is positioned at an inlet port communicating with an air receiver.

3,741,320

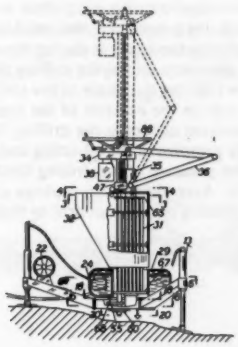
SUBSEA DRILLING ASSEMBLY

Karl Erik Hilfing, Stockholm, Sweden, assignor to Atlas Copc. Aktiebolag, Nacka, Sweden

Filed July 12, 1971, Ser. No. 161,851

Int. Cl. E21b *19/14, 47/02*

U.S. Cl. 175—6 **19 Claims**



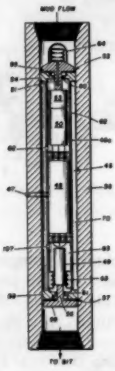
An off-shore drilling assembly comprises a main body which has sheaves or pulleys so that it can be lowered from a vessel like a block.

The main body performs a core drilling operation resting on the seabed. A traveller body can be pulled up and down between the vessel and the main body, fetching a core-containing core barrel inner tube from the bore-hole and delivering it to the vessel and returning it the emptied core barrel inner tube to the core barrel outer tube at the bottom of the bore-hole. The traveller body is firmly attached to the main body when it lands thereon.

3,741,321
MEANS TO PREVENT INWARD LEAKAGE ACROSS SEALS IN A WELL TOOL

Vasel R. Slover, Jr., 210 W. Northgate, Irving, Tex.; Daniel E. Hawk, 1115 Lady Lane, Duncanville, Tex., and Jack C. Brady, 100 W. Lilly Lane, Arlington, Tex.

Filed May 20, 1971, Ser. No. 145,373
Int. Cl. E21b 47/00
U.S. Cl. 175—40 5 Claims



A means is provided for preventing leakage of drilling fluid into a housing of a logging-while-drilling tool around seals in said housing. As illustrated, the tool has at least one oil-filled compartment in which a shaft is journaled. The shaft extends outward from the housing and has a rotor of a turbinelike means attached to the end thereof. A seal surrounds the shaft where it exits the housing. A pressure-sensitive means is provided on the tool upstream of the rotor and is positioned so that the pressure of the mud at that point is applied to the external surface of the pressure-sensitive means. Since the interior surfaces of both the pressure-sensitive means and the seal are in fluid communication with each other through the oil-filled compartment, the pressure on the interior surface of the seal will be effectively the same as the upstream pressure of the drilling fluid. By construction, the drilling fluid has to pass through either the rotor or the stator of the turbinelike means before the fluid acts on the exterior of the seal. Since an inherent drop in pressure occurs in the drilling fluid across the rotor or stator, the pressure of the oil acting inside the seal will be greater than the pressure of the drilling fluid acting on the outside of the seal. Accordingly, any leakage around the seal will be that of oil leaking out and not drilling fluid leaking in.

3,741,322
DRILLING RIG WITH DRILL ROD MAGAZINE

Jakob Wolters, Beeck, Germany, assignor to Maschinen-und Bohugeratefabrik Alfred Wirth & Co. KG, Erkelenz, Germany

Filed July 29, 1971, Ser. No. 167,159
Int. Cl. E21b 19/14
U.S. Cl. 175—52 13 Claims

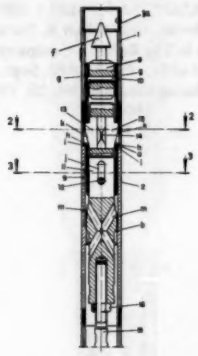
A drilling rig comprising a mast on which a drilling carriage with a power rotating head is adapted to slide, a drilling rod magazine which is disposed on the mast or on the frame of the drilling rig and which has a holder for a storage device provided with receptacles for the rod parts and movable relative to the holder, the power rotating head being adapted to be

moved out of a position above the center of a bore hole into a position above the storage device of the magazine and vice versa.

3,741,323
DOUBLE TUBE CORE BARREL WHICH IS LOWERED THROUGH DRILL PIPE

Dorin Constantinescu, Pacii; Sever Cruceanu, Grivitei; Eugen Spataru, Straduintei, and Nicolae Mereanu, Frumoasa, all of Romania, assignors to Institutul de Proiectari si Cercetari Pentru Utilay Petrolier-IPCUP, Bucharest, Romania

Filed Mar. 19, 1971, Ser. No. 126,029
Int. Cl. E21b 9/20, 25/00
U.S. Cl. 175—246 1 Claim

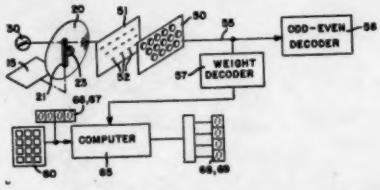


The double tube core barrel of the invention, which is to be lowered through a drill pipe, has a locking system between inner and outer tubular parts thereof which is particularly characterized by its sturdy and simple construction. Such locking system has two free, unlinked oscillating locking plates, the closing of the plates for releasing the locking system being accomplished by means of a sliding sleeve of special construction. This system eliminates every kind of failure of the locking system due to accidental deflection of the locking parts of classical systems provided with links. The core barrel of the invention also preferably has a novel system for breaking the core. Such core breaking system is provided with two core retainers. The supplementary core retainer is mounted on the outside tube; this allows the avoidance of traction overloading of the inner tube by reason of the taking over of these stresses by the outside tube. The system of the invention can be applied to core barrels with large sizes. When coring in soft rocks, the supplementary core retainer can be omitted.

3,741,324
WEIGHING SCALE WITH DIGITAL DISPLAY

Edwin E. Boshinski, Englewood; Walter W. Clark, Xenia; Roger W. Riehl, and William M. Watson, both of Troy, all of Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio

Filed May 3, 1971, Ser. No. 139,372
Int. Cl. G01g 23/38
U.S. Cl. 177—3 5 Claims

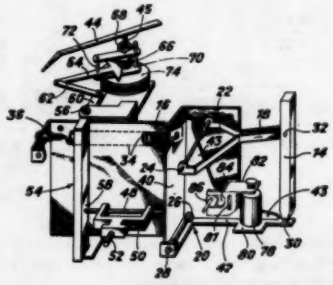


A weighing scale having a vertical housing with front and back walls includes electronic means for displaying visually the price per unit weight and the total price of goods placed on the scale platform. The housing also includes an optical chart, having human recognizable and machine recognizable indicia representing the weight of the goods placed on the scale platform, which moves through a distance proportional to the weight of the goods. Optical paths are provided to display visually the weight of the goods on ground glass plates mounted to be visible through the front and back walls, and a third optical path directs the machine recognizable indicia onto photodetectors to provide an electrical representation of the weight of the goods. An electronic computer within the scale computes the total value of the goods and displays this information visually, along with price per unit weight information provided by a manually operated keyboard, on electronic readout tubes.

3,741,325
WEIGHING MECHANISMS

Richard Stube, Gevelsberg, and Gunther Rimanek, Neider-Roden, both of Germany, assignors to said Stube, by said Rimanek, Gevelsberg, Germany

Filed Oct. 13, 1971, Ser. No. 188,973
Claims priority, application Germany, Jan. 20, 1971, P 21 02 519.4
Int. Cl. G01g 23/14, 23/26
U.S. Cl. 177—32 7 Claims

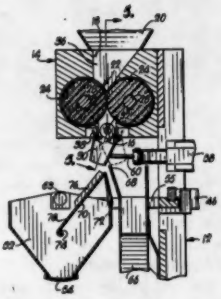


A weighing mechanism is capable of giving a direct reading of the quantity by weight of a substance contained in a quantity of mixture where the proportion of the substance in the mixture is known. The weighing mechanism includes a load member deflectable by the weight of objects to be weighed. A spring resists deflection of the load member and an indicator is provided which is adapted to be moved in response to deflection of the load member. An adjustable linkage is provided between the load member and the indicator, and adjustment of the linkage changes the relationship between deflection of the load member and movement of the indicator.

3,741,326
APPARATUS FOR WEIGHING SAMPLES

Robert D. Scraper, Hiawatha, Kans., assignor to Mid-America Testing Service, Inc., Hiawatha, Kans.

Filed June 21, 1971, Ser. No. 155,126
Int. Cl. G01g 11/00, 13/00
U.S. Cl. 177—59 7 Claims



A material weighing apparatus for collecting a predetermined amount, by weight, of material. A feeding structure in the nature of rollers is provided for metering the material in a uniform and steady flow to a collector. A shiftable spout is positioned below the feeding structure for diverting the flowing material away from the collector when a weight-sensing mechanism has determined that the proper amount of material has been received by the collector.

3,741,327
WEIGHING DEVICE

Kjell Helge Nordstrom, Avsynargat 15, and Rune Nils Allan Flinth, Rottargat 2, both of Vesteros, Sweden

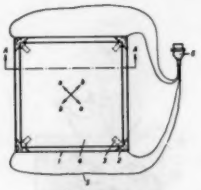
Filed Oct. 13, 1971, Ser. No. 188,957
Int. Cl. G01g 21/22
U.S. Cl. 177—163 17 Claims

A device for static or dynamic weighing of railway guided vehicles comprising a weigh rail adapted to replace a section of the normal rails with the weigh rail being supported at its ends independent of the adjacent rails and with shear sensing strain gages along the side surfaces of the rail and arranged on the neutral axis of the rail for sensing the load applied to the rail. The device may further include start and stop measuring gages on the weigh rail, an arrangement for providing side guiding of the weigh rail, a structural beam foundation for the weigh rail and spacer means for maintaining the spacing of the adjacent rail ends.

3,741,328
WEIGHING DEVICE WITH CANTILEVER WEIGHING CELLS

John-Erik Andersson; Jan Kenneth Gustafsson; Rolf Paul Haggstrom, and Bengt-Ake Karlsson, all of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Apr. 7, 1971, Ser. No. 131,867
Claims priority, application Sweden, Apr. 13, 1970, 4986/70
Int. Cl. G01g 3/14
U.S. Cl. 177—210 7 Claims

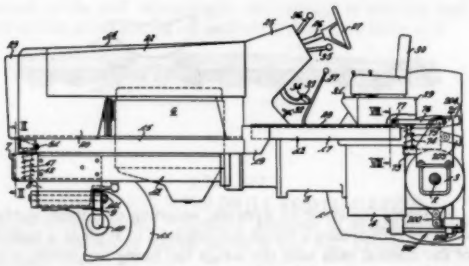


A scale for weighing heavy loads comprising a horizontally disposed frame structure in which a load platform is horizontally supported by load cells at least at three points. The peripheral outline of the platform is such that it can be laterally and vertically displaced within the frame structure. The load cells include strain gauges each of which comprises a first and a second elongate member. The first member is fixedly secured to one end of the second member in a parallel aligned relationship therewith. One member of each strain gauge is secured to the frame structure and the other supports the platform. The members in the strain gauges are free to bend in response to a load placed upon the platform and such bending sets up corresponding potentials which are indicative of the load and are measured by suitable measuring means. Moreover, between some of the strain gauges and the platform are abutting bearing means so constructed that lateral movements of the platform cause vertical movements of the platform.

3,741,329
CHASSIS SUSPENSION ON VEHICLE FRAME

Owen K. Davis, Waukesha; Robert C. Haupt, Milwaukee; Kenneth N. Hansen, Waukesha, and Michael L. Slosiarek, Milwaukee, all of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed May 18, 1971, Ser. No. 144,420
Int. Cl. B62d 33/06
U.S. Cl. 180—89 R 10 Claims

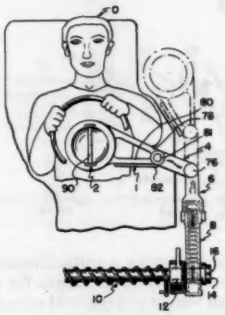


A suspension system including a vehicle main frame mounted unsprung on a plurality of wheels carrying a spring suspended chassis defining an operator station and engine hood for dampening vibration and shock transmitted from the frame to the chassis.

3,741,330
VEHICLE SAFETY DEVICE

James Monaghan, 11849 Clifton Boulevard, Apt. 204 A, Lakewood, Ohio

Filed July 16, 1971, Ser. No. 163,379
Int. Cl. B60r 21/06
U.S. Cl. 180—103 56 Claims



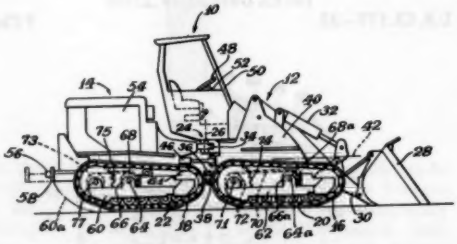
The disclosure relates to a vehicle occupant restraint device. The device comprises a resilient pad for restraining the occupant, a transversely extending rigid support crossmember for disposing the pad in spaced proximity to the occupant's torso and a horizontal adjustment mechanism which permits adjustment of the horizontal spacing between the occupant's torso and the pad while preserving the disposition of the pad in an attitude parallel to the transverse general plane of the occupant's torso.

The device also may include an automatic operation system for positively restraining an occupant on accident impact.

3,741,331
CLOSE COUPLED FRAME STEERED ALL CRAWLER TRACTOR

John J. Kowalik, Glenview, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Aug. 21, 1970, Ser. No. 65,826
Int. Cl. B62d 11/20, 55/30
U.S. Cl. 180—9.44 2 Claims



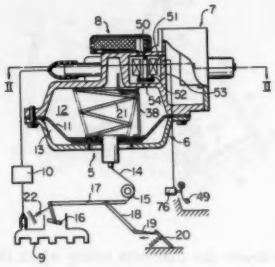
Frame-steered, all crawler tractor having articulated frame sections end-to-end, and crawler tracks provided on one section which can be retracted from those confronting crawler tracks in tandem therewith which are provided on the other section. In driving the tractor into a turn I thus afford a retractive endless track, say a rear track which, as I make the turn, takes the inside of the turn, but at all times keeps its distance from the front track at the inside of the turn.

There is no interference because the retractive track, in the case of the rear track for instance, does not try to climb up on the front track, and the resulting close-coupled articulated vehicle is not train-like in length.

3,741,332
SAFETY DEVICE FOR MOTOR-VEHICLE ENGINE-SPEED GOVERNOR

Naoji Sakakibara; Yasuhiro Kawabata, and Korehiko Tsukuba, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Dec. 22, 1970, Ser. No. 100,626
Int. Cl. B60k *31/00*
U.S. Cl. 180—108 **4 Claims**

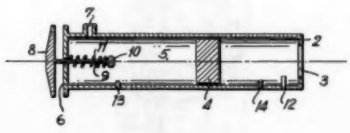


A safety device for a motor-vehicle engine-speed governor in which a safety-valve means is built additionally in the control valve means of the engine-speed governor. This safety valve means is opened when the motor-vehicle speed increases beyond the range of normal cruising speed defined by the engine speed governor by admitting atmospheric air into a vacuum chamber operatively connected to an engine throttle member and hence closing the same to reduce the vehicle speed. Alternatively, the safety valve means may be replaced by normally open switch means which, when closed in the event of excessive speed, opens the electromagnetic valve means of the engine speed governor adapted to provide communication between the vacuum chamber and the atmosphere upon depression of a brake pedal.

3,741,333
GENERATORS OF FLUID WAVE TRAINS

Raymond Muniz, Versailles, and Robert Argirakis, Legue de Longroi, both of France, assignors to Compagnie Generale De Geophysique, Paris, France

Filed Jan. 23, 1969, Ser. No. 793,415
Int. Cl. G01v *1/02*
U.S. Cl. 181—.5 H **7 Claims**

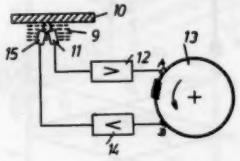


A generator produces vacuum or pressure surges in a sea or a lake so as to form seismic wave trains passing through the bottom of the water bed and back into the water for subsequent investigation. The generator includes a movable system, mainly a disc or a cylinder cover adapted to move between predetermined limits under the impact of a hammering means constituted as a piston urged forwardly in a cylinder so as to violently strike the rear end of the movable system and to produce thereby the desired surges to the rear and/or front of the movable system. The hammering means is subjected when released to the hydrostatic pressure which urges it forwardly into engagement with the rear end of the movable system constituted advantageously by a rod rigid with the disc or the like and extending coaxially in the cylinder for cooperation with the piston.

3,741,334
METHOD AND APPARATUS FOR MEASURING THICKNESS BY EXCITING AND MEASURING FREE RESONANCE FREQUENCY

Walter Kaule, Cologne-Dellbruck, Germany, assignor to Dr. J. M. H. Krautkramer, Gesellschaft fur Elektrophysik, Cologne-Klettenberg, Germany

Filed May 21, 1971, Ser. No. 145,618
Int. Cl. G01n *29/00*
U.S. Cl. 181—0.5 NP **20 Claims**



The ultrasonic frequency of the thickness mode free resonance of plates or sheets is measured to precisely determine their thickness. The thickness free resonance is the natural frequency of vibration of the plate or sheet in the thickness mode when the same is not influenced by contact probes or the like and is not subject to the application of external energy. The free resonance is induced by first subjecting the portion of the article to be measured to a noise source for a first time interval; thereafter picking up the free resonance ultra sound produced by the article; storing the decaying sound; and, after the article has ceased resonating, feeding back the decaying sound to the sheet to induce high amplitude resonant vibrations therein; stopping the feed-back after a short interval; allowing the resonance to decay in its natural mode; again picking up and storing the decaying resonant frequency sound produced by the article; after resonance has ceased, again feeding back the decaying resonant frequency sound to the sheet; and so forth repetitively. Sound frequency meters are employed for measuring the frequency of the sound produced by the article when it is not being excited, i.e., when the resonance is decaying in its natural mode.

Apparatus provided by the invention comprises a liquid coupling medium in which the sheet or plate is immersed; an ultrasonic transducer for radiating ultrasound to the article; a second ultrasound transducer for picking up the resonant sound produced by the article; appropriate amplifiers; and a delay line in the form of a rotating magnetic recording apparatus for recording the decaying resonant frequency and, after the resonance has died out, feeding the same back through the irradiating transducer. Alternative apparatus locates the transducer ten centimeters away from an article to provide inherent delay in the transmission path to and from the article and comprises an electronic switch connecting the two ultrasonic transducers, and amplifiers in a feed-back loop with the article, the excitation being applied only at intervals greater than the decay period of the article's resonance. Also disclosed is an auxiliary ultrasonic pulse echo system for measuring transmission distance from the transmitting transducer to the article plate and for controlling the electronic switch accordingly.

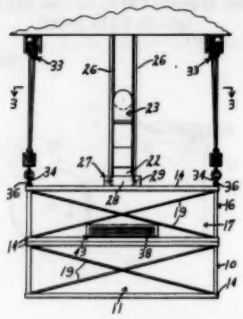
3,741,335
SOUND REDUCING UNIT FOR MACHINERY

Rene D. Lebeau, Hartselle, Ala., assignor to Woodworking Engineering & Machinery Co. Inc., Hartselle, Ala.

Filed May 30, 1972, Ser. No. 257,512
Int. Cl. G10k *11/00*
U.S. Cl. 181—33 K **11 Claims**

An open top housing formed of sound deadening material surrounds the lower portion of machinery with the upper por-

tion of machinery encased by a movable housing formed of sound deadening material. A depending conduit extends through top of the movable housing with cooperating guide means between said top and the depending conduit limiting



lateral movement between said top and the conduit. Movable housing is moved selectively along the conduit to an upper position spaced from the stationary housing to a lower position in cooperation with the stationary housing.

3,741,336

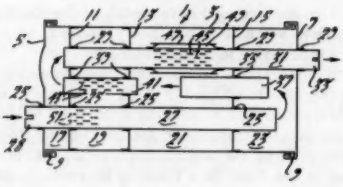
EXPANSION TYPE SILENCER

James B. Malosh, Calumet, Mich., assignor to Tenneco Inc., Racine, Wis.

Filed June 10, 1971, Ser. No. 151,867

Int. Cl. F01m *1/08*

U.S. Cl. 181—54 **13 Claims**



A retroverted or tri-flow type muffler for use in internal combustion engine exhaust systems has inlet and outlet tubes and a pair of expansion chambers interposed in the gas path between the tubes, the chambers being interconnected by an intermediate imperforate tube which together with the two chambers is tuned to attenuate a broad band of frequencies.

3,741,337

AERIAL PLATFORM-S SAFETY CONTROL

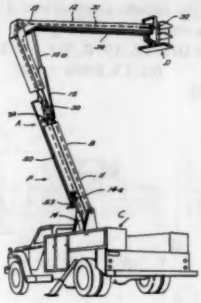
Walter L. Visinsky, 302 Sidney, Houston, Tex.

Filed Aug. 16, 1971, Ser. No. 171,811

Int. Cl. B66f *11/04*

U.S. Cl. 182—148 **2 Claims**

A hydraulic flow control circuit for use with the hydraulic lifting piston in an aerial platform for controlling the rate of the descent of the aerial platform when the power supply for furnishing fluid pressure to the lifting piston is inoperative including a flow conduit for flowing hydraulic fluid from the high pressure side of the lift piston with orifice means in such flow line for restricting the rate of fluid flow to limit the rate of descent of the aerial platform with flow control means adjacent the aerial platform to enable the occupant of the aerial



platform to lower the platform safely when the power power source for hydraulic fluid is inoperative.

3,741,338

VERTICALLY COLLAPSIBLE UPRIGHT FOR LIFTING GANTRIES AND THE LIKE

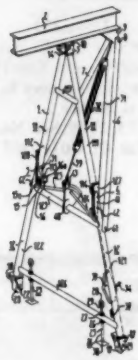
Pierre E. Durand, 39 rue des Noirets, 21 Gevrey-Chambertin, and Jean Ch. Durand, 56 rue du Transvaal, 21 Dijon, both of France

Filed June 6, 1972, Ser. No. 260,218

Claims priority, application France, June 11, 1971, 7122126

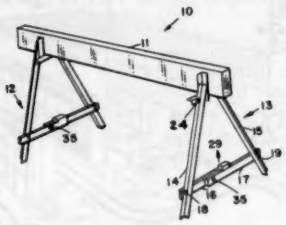
Int. Cl. F16m *11/00*

U.S. Cl. 182—155 **6 Claims**



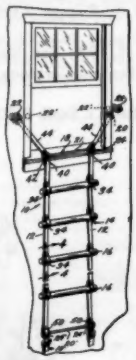
For a vertically collapsible apparatus including an upper beam, such as lifting gantries, scaffoldings, . . . , a vertical upright or leg, normally used in pair, said leg comprising three elements pivoting on one another and on the beam by four axes of articulation (as known per se), wherein the four axes are parallel and perpendicular to the axis of the beam. The three elements are : a triangular element articulated by its apex on the beam at a distance of the end thereof, a trapezoidal element pivoting at the base of the first triangular element, and another triangular element having its apex articulated on the end of the beam and its base articulated on the trapezoidal element between the large and the small base thereof, whereby said apparatus can assume an operating and a transport position by a simple and practical manual operation.

3,741,339
COLLAPSIBLE SAW HORSE STAND
Douglas C. Eubank, Monument Circle, Indianapolis, Ind.
Filed Dec. 13, 1971, Ser. No. 207,472
Int. Cl. E04g 1/32; F16m 11/00
U.S. Cl. 182—186 2 Claims



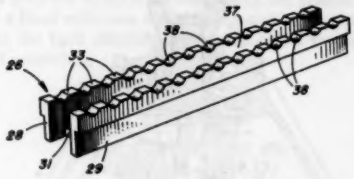
A collapsible stand for supporting one end of a saw horse beam. The stand has two legs pivotally mounted near their top ends to a horizontally extending bar. A pair of upwardly extending members are pivotally mounted to the bar inwardly of the legs. Means are mounted to the lower portion of the legs to spread the lower portions apart thereby forcing the top leg ends against the members to clamp the saw horse beam therebetween. The members and legs each have an L-shaped cross section.

3,741,340
FLEXIBLE LADDER
William L. Andrews, 1 S. Ridge Road, Richmond, Va.
Filed Nov. 18, 1971, Ser. No. 199,919
Int. Cl. E06c 1/56
U.S. Cl. 182—196 14 Claims



Loops are formed at correspondingly spaced levels in two flexible fabric tapes. The two loops at each level receive the opposite ends of a ladder rung. The ladder is provided with a top rung that prevents lateral separation of the tapes to prevent disconnection of the rungs from the tape during use of the ladder. The tapes are provided with means at the upper ends for securing the ladder to the inner side of a building exterior wall on opposite sides of a window. Means may be provided on the lower end of the ladder for securing another ladder section thereto, with ladder side separation preventing means.

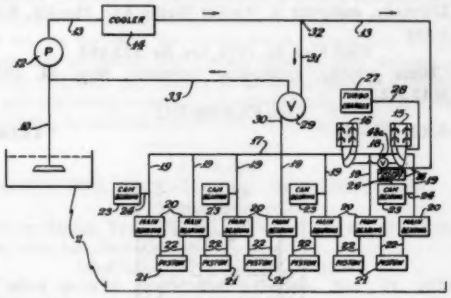
3,741,341
SELF CLEANING SAFETY STEP BAR
Leopold Bustin, P. O. Box 589, Dover, N.J.
Filed July 1, 1971, Ser. No. 158,929
Int. Cl. E06c 7/08
U.S. Cl. 182—228 1 Claim



A safety step bar, e.g. for use in the manufacture of ladders, includes a first longitudinally extending strip and a second longitudinally extending strip which are disposed in parallel relationship and spaced by a plurality of transversely extending bars between the inner surfaces of the first and second strips. The upper edges of the longitudinally extending strips are formed to define prongs for providing a non-skid surface for the step bar.

The bar of the invention is disclosed as being manufactured by extrusion or like processes to define a monolithic structure to improve the manufacturing economies.

3,741,342
ENGINE OIL COOLING AND FILTERING METHOD AND APPARATUS
Raymond J. Maddalozzo, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Nov. 8, 1971, Ser. No. 196,710
Int. Cl. F16n 39/06; F01m 5/00
U.S. Cl. 184—6.4 3 Claims



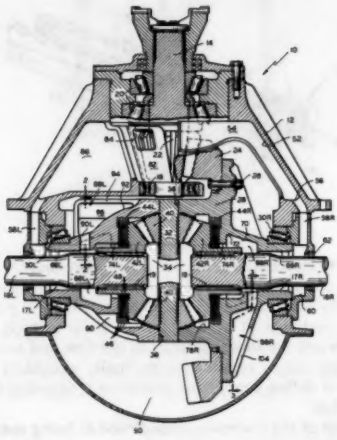
Forced engine lubrication system with cooler, filter, pressure regulated shunt around the filter, and a bypass back to the inlet side of or to the fluid source to, an oil pump supplying the system, the system novelly operated by a bypass valve responsive to pressure in the oil gallery of an engine. The bypass is connected to a region of the system between the cooler and the filter so that all the lubricant is cooled, and the bypassed portion of the lubricant does not go through the filter.

3,741,343

LUBRICATION SYSTEM FOR A DIFFERENTIAL

John A. Lindenfeld, St. Joseph, Mich.; Cledith L. Hartz, South Bend, Ind., and Noah A. Shealy, Niles, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 29, 1971, Ser. No. 138,514
Int. Cl. F16n 7/16
U.S. Cl. 184—11 A 13 Claims



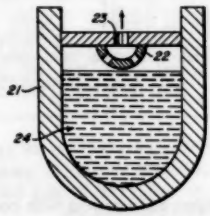
A differential having a lubrication system for supplying lubricant to the interior of the rotating differential carrier both at high and low rotative speeds. An axleway is provided in the carrier along its axis of rotation and a first bore forms that portion of the axleway adjacent the carrier's inner cavity. Cups are provided around the carrier's exterior and fluid passages extend radially through the carrier from these cups into the axleway to a radius less than the radius of the first bore.

3,741,344

APPARATUS FOR AUTOMATIC LUBRICATION OF VIBRATION GENERATORS

Alois Kohl, and Rudolf Hartmannsgruber, both of Munich, Germany, assignors to Wacher-Werke KG, Munich, Germany

Filed Mar. 15, 1971, Ser. No. 123,955
Claims priority, application Germany, Mar. 14, 1970, P 20 12 292.3
Int. Cl. F16n 7/32
U.S. Cl. 184—69 1 Claim



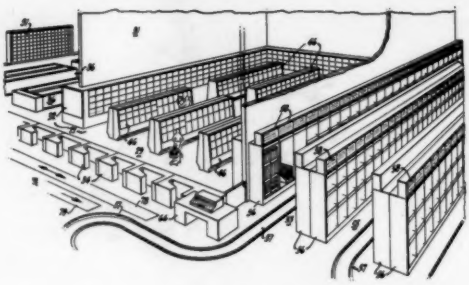
A method of and arrangement for automatically lubricating a vibration generator according to which the vibration of the vibration generator to be lubricated is conveyed to means in a lubricant-containing storage vessel, which means release lubricant to the area to be lubricated in conformity with the vibrations of the vibration generator.

3,741,345

SEMI AUTOMATED RETAIL STORE

Harry Saridis, 1741 Delware Street, Berkeley, Calif.

Filed Mar. 3, 1971, Ser. No. 120,465
Int. Cl. E04h 3/04
U.S. Cl. 186—1 R 4 Claims



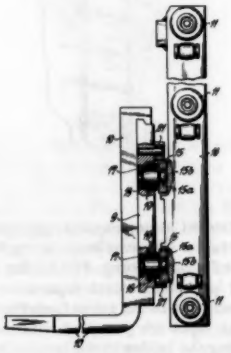
Retail store equipped for both self-service and order service wherein the order service portion displays coded samples of goods, supplies of which are stored in coded areas of a storeroom with signal lights for each area of the storeroom which is traversed by a truck for order filling. A store control station includes a computer for comparing with its memory a customer filled-out order for activating in the storeroom goods-signal lights, a lit set of which relate to a customer's order for goods. The truck is equipped with a computing device to read a plurality of order cards. Goods are delivered from the truck terminis by conveyor to final check out and the customer is notified by a call board when her order is ready. A storage conveyor is provided for holding goods at their final check out adjacent an auto pick-up zone.

3,741,346

SHOCK-PROOF FORK SUPPORT FOR FORK LIFT TRUCKS

Bernhard Herdemann, Dortmund-Hombruch, Germany, assignor to Orenstein & Koppel Aktiengesellschaft, Berlin, Germany

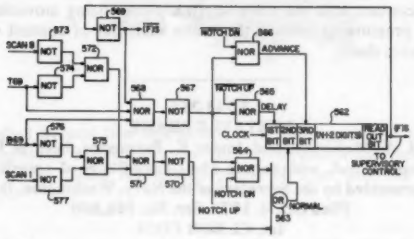
Filed Oct. 7, 1971, Ser. No. 187,426
Claims priority, application Germany, Oct. 8, 1970, P 20 49 414.8
Int. Cl. B66b 9/20
U.S. Cl. 187—9 4 Claims



A telescopic mast with stand mast and drive mast for fork lift trucks, which includes a fork support vertically movable in the drive mast and also includes load pick-up and supporting

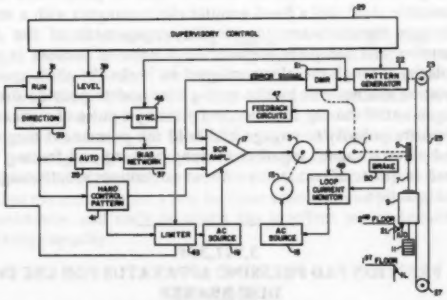
elements connected to said fork support by means of a supporting plate, which latter is in horizontal direction elastically supported by the base frame of the lift carriage.

3,741,347
STATIC ELEVATOR SUPERVISORY SYSTEM
Andrew F. Kirsch, Edison, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 13, 1971, Ser. No. 179,644
Int. Cl. B66b *1/18*
U.S. Cl. 187—29 R **21 Claims**



In a scanning type elevator control system, various control signals associated with the individual landings are serially stored in shift registers in the order of the landings. Circulation of the signals through the shift registers is synchronized with the scanner so that the signals associated with a particular landing are presented to the supervisory control each time the scanner is scanning the particular landing. When a shift register is utilized as a floor selector a signal representing the position of the car is advanced or retarded in the scanning sequence as the car moves from one floor to the next.

3,741,348
MOTOR CONTROL SYSTEM
William R. Caputo, Wyckoff, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 837,442, June 30, 1969, abandoned. This application Nov. 12, 1971, Ser. No. 198,199
Int. Cl. B66b *1/30*
U.S. Cl. 187—29 R **25 Claims**

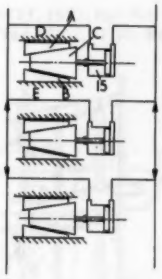


A variable-voltage elevator drive system uses a silicon controlled rectifier amplifier to excite the field of the direct current generator directly from an alternating current source. A speed reference signal generated as a continuous function of the position of the car relative to the landings is compared with the actual speed of the motor in a drag magnet regulator. The error signal thus produced is combined with a bias signal which compensates for the lag in the response of the elevator car, and the resultant signal controls the SCR amplifier. Leveling is accomplished utilizing the error signal without the bias. If the car starts outside of the leveling zone, a positive limitation is imposed on the speed attainable by limiting the potential of the alternating current supplied to the SCR amplifier until resynchronization is accomplished at the next stop. A negative feedback loop further reduces the response of the system under these conditions. High loop current flowing two seconds after the brake is set shuts down the system. On hand control a fixed reference signal dampened by a signal proportional to the back electromotive force of the motor controls the SCR amplifier.

ERRATUM

For Class 187—95 see:
Patent No. 3,741,351

3,741,349
NUCLEAR REACTORS
Robert Banks, Vicars Cross, England, assignor to The Nuclear Power Group Limited, Knutsford, Cheshire, England
Filed Dec. 3, 1970, Ser. No. 94,748
Claims priority, application Great Britain, Jan. 14, 1970, 1,785/70
Int. Cl. B61h *7/12*
U.S. Cl. 188—42 **2 Claims**

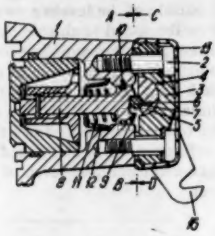


In a nuclear reactor, clamping means for clamping together a moving member and a fixed member against the effects of seismic shock comprise wedge devices mounted between fixed and moving members, the wedge devices comprising wedges adapted to be moved into contact with opposed surfaces of moving and fixed members by an actuating member operated by external means manually or automatically. The clamping means may be associated with a fuel charging machine.

3,741,350
ACTUATING AND RETURNING DEVICES FOR DISC BRAKES
Wilhelm Knapp, Bad Hamburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Nov. 1, 1971, Ser. No. 194,199
Claims priority, application Germany, Nov. 21, 1970, P 20 57 322.2
Int. Cl. F16d *65/46*
U.S. Cl. 188—72.6 **1 Claim**

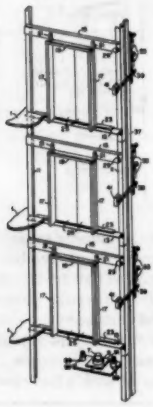
There is disclosed an actuating and returning device for spot-type disc brakes. The device disclosed can be positioned at any desired position around the disc, it is cheap and simple to manufacture. The semi-circular shaft of the actuating lever is held and guided in a semi-circular guideway of a support cover detachably connected to the housing. The shift is secured against axial shafting by means of a power transmitting roller disposed in a semi-circular recess in the shaft with the recess being disposed eccentrically with respect to the axis of the shaft. The roller is guided in a groove formed in

the end of the returning spindle adjacent the shaft and is held in its axial position by a guide bore in the housing and by



means of a helical spring engaging the spindle adjacent the guide bore.

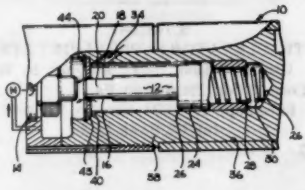
3,741,351
INTEGRATED ELEVATOR CONSTRUCTION
John Suozzo, Hackensack, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 5, 1971, Ser. No. 121,318
Int. Cl. B66b 7/02
U.S. Cl. 187—95 11 Claims



Elevator guide rails are combined with the hatch door assemblies and fronts to form a complete front assembly which can be installed as a unit and secured to the building through floor angles. Auxiliary equipment such as corridor buttons, ducts and limit switches may be mounted on the front assembly as required. The car assembly employs a sling that integrates the door operator support and the front beam of the platform with the stiles.

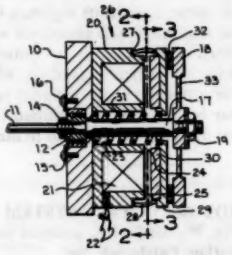
3,741,352
SHAFT BRAKE ASSEMBLY
John R. Hedrick, La Crescenta, Calif., assignor to Hall International Inc., Santa Barbara, Calif.
Filed Mar. 31, 1971, Ser. No. 129,766
Int. Cl. F16d 65/24
U.S. Cl. 188—70 8 Claims

A shaft brake assembly for stopping inertial rotation of a drive shaft wherein a brake shaft is secured against rotational movement by means of a disc, the disc being fixedly secured to a housing, the brake shaft being continuously biased to move



into contact with the drive shaft, a piston being movable by fluid pressure to remove the brake shaft out of contact with the drive shaft.

3,741,353
BI-STABLE BRAKE
David W. McKinley, and James K. Parmerlee, both of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 4, 1971, Ser. No. 186,000
Int. Cl. B60t 13/04
U.S. Cl. 188—171 4 Claims

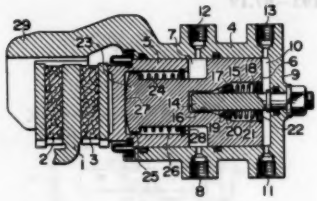


A bi-stable brake having an annular spring biased cap armature member with permanent magnets affixed thereto slidable along its axis between an annular disk or plate fixed to a rotatable shaft and a fixed annular electromagnet with a small air gap therebetween to provide engagement of the cap member and the plate initiated by a pulse of current in one polarity through the electromagnet to brake the shaft against rotation maintained by the spring bias and to provide disengagement of the cap member and plate by a pulse of current of opposite polarity to engage and hold the permanent magnets and electromagnet together thereby braking and freeing the shaft in either of two states without continuous electromagnet energization.

3,741,354
FRICTION PAD PRESSING APPARATUS FOR USE IN DISC BRAKES
Toshiwo Ooka, Amagasaki, and Koji Takata, Nishinomiya, both of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Jan. 29, 1971, Ser. No. 111,073
Claims priority, application Japan, Feb. 4, 1970, 45/10289
Int. Cl. B60l 11/20
U.S. Cl. 188—345 4 Claims

A friction pad pressing apparatus for use in a disc brake adapted by a dual hydraulic braking system having first and

second hydraulic pressure circuits. The apparatus comprises a first piston and a second piston which are slidably received in a cylinder and are each actuated by the hydraulic pressure

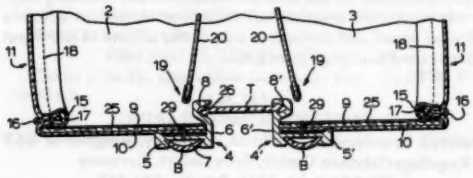


supplied by said first and second hydraulic pressure circuits respectively, detent means for the second piston and resilient means for urging the second piston to abut with the first piston.

3,741,355
SOFT SIDED LUGGAGE CASE

Jack Slan, Toronto, Ontario, Canada, assignor to Dominion Luggage Co. Limited, Toronto, Ontario, Canada

Filed June 29, 1970, Ser. No. 50,839
Int. Cl. A45c *3/00, 13/00*
U.S. Cl. 190—49 **2 Claims**



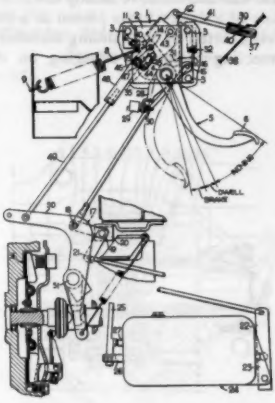
A soft sided center opening luggage case comprising two hinged sections and having a strong, rigid central frame structure running around the case, resilient frame structures anchored from the central frame structure and extending laterally outwardly as resilient cantilevers, and a soft or flexible material closing the side of the case and supported from the free edges of the resilient cantilevers. The inside face of each section of the case is also closed by a releasable partition so that the case provides two sections which can be packed independently and each of which has in effect an expandable packing capacity.

3,741,356
CONTROL LINKAGE FOR MASTER AND TRANSMISSION CLUTCHES

Gerald E. Sieren, Greendale, and Kenneth N. Hansen, Waukesha, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 13, 1971, Ser. No. 207,434
Int. Cl. B60k *29/00*
U.S. Cl. 192—3.61 **10 Claims**

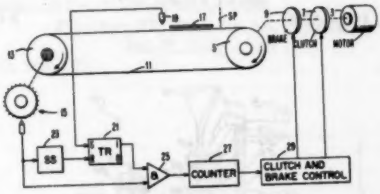
A vehicle brake and transmission control having a hand latch to selectively disengage one or two clutches while engaging the brake with a foot control lever.



3,741,357
POSITION CONTROLLING SYSTEM

Genadij Krysiuk, and Johann H. Meier, both of Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,716
Int. Cl. F16d *67/02, 71/00;* **B65h** *7/14*
U.S. Cl. 192—12 D **7 Claims**



A serial loop memory, such as a ring counter, for example, of capacity equal to the units of distance between a sensing station and a desired stopping station is operated in synchronism with a transport mechanism whenever an article in the transport system has been sensed and has not yet stopped. The complement in the loop memory is used as a feed-forward correction to modify the application of braking means to the transport system so that the brake application will take place at an appropriate time during the next document cycle.

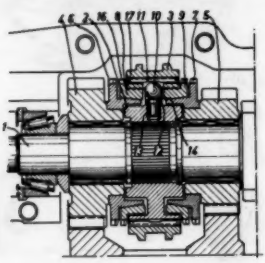
3,741,358
SYNCHRONIZERS

Roger Magnier, Billancourt, France, assignor to Regie Nationale Des Ursines Renault, Billancourt and Automobiles Peugeot, Paris, both of France

Filed Sept. 20, 1971, Ser. No. 182,086
Claims priority, application France, Sept. 24, 1970, 7034617
Int. Cl. F16d *23/06*
U.S. Cl. 192—53 F **5 Claims**

A device for synchronizing the driving and driven elements of a change-speed transmission mechanism comprising a hub rigid with the driving shaft, an axially movable sliding member forming an outer ring, a synchromesh ring formed with a

tapered friction surface which is rotatably rigid with said hub and adapted to be shifted angularly between two abutment surfaces of said hub and to move axially towards the conjugate tapered surface of a driven loose pinion as a consequence of the axial thrust exerted by said sliding member and of intermediate connecting members engaging on the one hand



notches formed in said hub and on the other hand a common groove formed in said sliding member, said elements being radially retractable during the synchronization and consisting of balls adapted to be moved in a manner known per se by the sliding member towards an abutment surface formed on said synchromesh ring in a plane perpendicular to the axis of rotation of said ring.

3,741,359

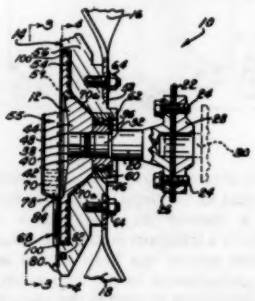
FLUID COUPLING

Wayne K. Leichliter, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 26, 1971, Ser. No. 202,187

Int. Cl. F16d *35/00*

U.S. Cl. 192—58 B **8 Claims**



A fluid coupling comprises first and second rotatable coupling members. The first coupling member defines a chamber in which the second coupling member is located. The first and second coupling members include spaced opposed surface portions defining a shear space therebetween. The spaced opposed surface portions are cooperable with a fluid shear medium within the shear space to provide a shear type fluid drive therebetween. One of the coupling members defines a reservoir chamber for the fluid shear medium. Means are provided for varying the volume of the fluid shear medium in the shear space dependent on the temperature of the fluid shear medium. The volume varying means includes a vane means on one of the coupling members which vane means defines a passage communicating the shear space with the reservoir chamber to change the volume of the fluid in the shear space dependent on the temperature of the fluid medium.

3,741,360

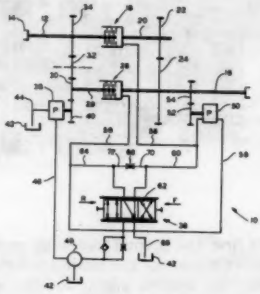
PUMP CONTROLLED PRESSURE MODULATOR FOR REVERSING CLUTCHES

Jon R. Patton, Jackson, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 29, 1971, Ser. No. 213,676

Int. Cl. F16d *25/10*

U.S. Cl. 192—87.19 **6 Claims**



A clutch shift modulation system is disclosed in operative relationship with a transmission having a torque input shaft and a torque receiving shaft. The transmission includes fluid pressure engaged forward and reverse clutches that may be engaged to drivingly rotate the receiving shaft in the respective forward or reverse direction when acted upon by fluid at a selected pressure, and a pump driven by the input shaft is adapted to supply fluid at this pressure to a shift valve which may be moved to a forward or reverse position to selectively connect the pump with the respective clutch through suitable conduits. A reversible pump driven by the receiving shaft pumps fluid in a direction and at a pressure which is a function of the rotative direction and speed of the receiving shaft and this reversible pump is connected between the two conduits leading from the valve to the two clutches so that during shifting it detracts from the efforts of the input driven pump to engage a particular clutch until the rotation of the receiving shaft in the respective opposite direction has slowed to below a selected speed and thereafter aids in the efforts of the input driven pump to engage this clutch.

3,741,361

CLUTCH RELEASE BEARING

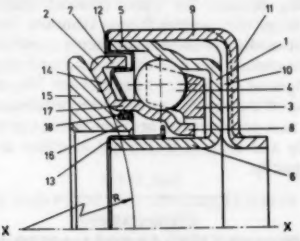
Manfred Brandenstein, Aschfeld, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed Sept. 28, 1971, Ser. No. 184,467

Claims priority, application Germany, Oct. 2, 1970, P 70 36 423.7

Int. Cl. F16d *13/60*

U.S. Cl. 192—110 B **12 Claims**

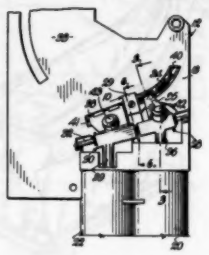


A clutch release bearing comprising an outer race ring adapted to be connected to the clutch operating mechanism, an inner race ring and a plurality of bearing elements located therebetween. The bearing includes engagement means abutting the inner race ring and adapted to contact the clutch elements. The abutting surfaces of the race ring and the engagement means are correspondingly curved to permit relative movement therebetween.

3,741,362
ALTERNATING FEED FOR COINS OR THE LIKE

Rajendra P. Shah, Kansas City, Mo., assignor to The Vendo Company, Kansas City, Mo.

Filed June 14, 1971, Ser. No. 152,754
Int. Cl. G07f 1/00
U.S. Cl. 194—1 H 5 Claims

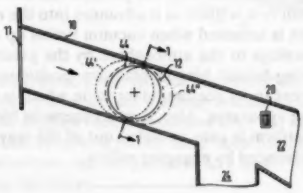


Mechanism for successively feeding coins or the like from a single passage alternately into each of a pair of receiving channels or storage tubes is provided, which employs a rockable coin deflector assembly that is movable into blocking relationship to one channel by entry of a coin into that channel, releasable latching means for holding such deflector assembly in blocking relationship to that one channel, and a second rockable assembly associated with the other channel and adapted to release the latching means for movement of the first mentioned deflector assembly away from its blocking position whenever a coin enters the other channel. The mechanism also includes a deflector forming a part of the second assembly for blocking the other channel to divert coins to a third channel when said one and said other channels are both filled with stored coins.

3,741,363
ELECTRONIC COIN TESTING APPARATUS

Adolf Hinterstocker, 28 Hirschbergstrasse, Roggersdorf near Holz Kirchen, Germany

Filed June 15, 1971, Ser. No. 153,228
Claims priority, application Germany, June 16, 1970, P 20 29 751.2
Int. Cl. G07f 3/02
U.S. Cl. 194—100 A 7 Claims

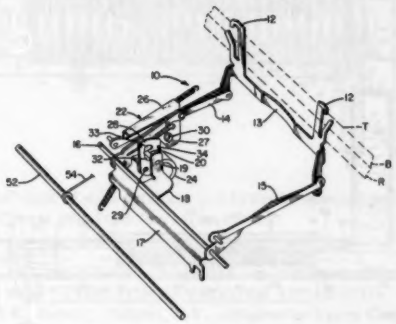


An electronic coin testing apparatus for comparing a coin travelling down a chute with a standard coin, of the type including means for producing a difference signal depending on the difference between the effect produced by the coin to be tested and that produced by the standard coin, the said difference signal decreasing from a predetermined value to zero and rising again as a coin identical with the standard coin passes a given position in the chute comprises a threshold device producing or not producing a predetermined threshold output signal depending on whether or not the difference signal exceeds a given value, a gate for separating accepted coins from rejected coins, and discriminating means for actuating the gate arranged to accept a coin only if there is a threshold output signal and it is not followed by a second such signal within a predetermined period of time.

3,741,364
RIBBON SHIFT ASSEMBLY

Harold D. Becker, Riverton, Wyo., assignor to Datel Corporation, McLean, Va.

Filed Jan. 8, 1971, Ser. No. 105,053
Int. Cl. B41j 33/14
U.S. Cl. 197—151 3 Claims

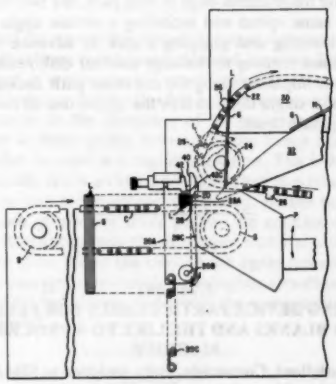


A solenoid-operated actuating bail affords a positive, direct means to control shifting of the lift arms in a ribbon-lift guide or carrier assembly for a keyboard printer or typewriter in selecting a desired ribbon color or level for printing.

3,741,365
TRANSFER MECHANISM FOR BATTERY GRIDS

Charles H. McAlpine, Coloma, and Kenneth G. McGowan, Lawrence, both of Mich., assignors to Mac Engineering & Equipment Co., Benton Harbor, Mich.

Filed Apr. 10, 1972, Ser. No. 242,616
Int. Cl. B65g 47/00
U.S. Cl. 198—27 3 Claims

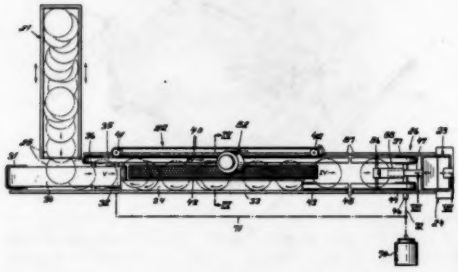


A device is disclosed for handling grids or plates for storage batteries on a production line which transfers and spaces double grids connected together at their bottom edges hung by outwardly-extended connector lugs on an advancing chain conveyor for feeding the grids to a second chain conveyor or other device to another machine such as a pasting machine. The transfer device compensates for bent or deformed connector lugs which could jam the device to maintain steady and uniform feeding and transfer of the double grids at spaced intervals.

3,741,366
DEVICE FOR ORIENTING AND STACKING SHALLOW CUPS AND LIDS

Hugh Van Melle, and Herbert Rees, both of Ontario, Canada, assignors to Husky Manufacturing & Tool Works Ltd., Balton, Ontario, Canada

Filed Mar. 26, 1971, Ser. No. 128,392
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AB 18 Claims



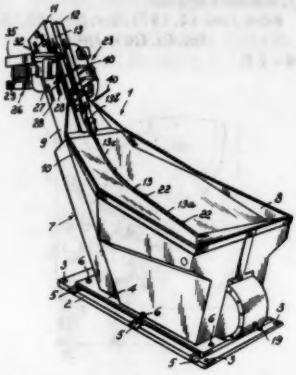
Disk-shaped articles with a flat and a recessed side, coming from an injection-molding machine, are entrained by an upwardly sloping conveyor to an orienting head comprising a centrlly positioned roller, of a width substantially less than the disk diameter, around which the articles must pass to reach a vertical chute feeding them to a stacking tube. A stationary flipper confronting the roll, just above the chute entrance, engages the undersides of articles riding around the roller with their concavities outwardly to reorient them; otherarticles, facing the roller with their concave sides, hug the roller more closely and therefore escape the flipper. For articles liable to overlap and nest on their way to theorienting head, the conveyor includes a stationary ledge defining one longitudinal edge of the transport path and a pair of moving belts defining the opposite longitudinal edge of that path, the two belts moving at the same speed and including a obtuse angle for unilaterally elevating and gripping a disk to advance it with a rolling motion tending to dislodge another disk resting on it. An eccentric impactor along the conveyor path, located above the level of a single disk, strikes the upper one of two nested disks to separate them.

3,741,367
LOADING DEVICE PARTICULARLY FOR FEEDING SCREW BLANKS AND THE LIKE TO A PROCESSING MACHINE

Albino Castiglioni, Cornaredo, Italy, assignor to SIMA Societa Italiana Machine Automatiche S.R.L., Cornareo (Prov. Milan) Italy

Filed June 1, 1971, Ser. No. 148,591
Claims priority, application Italy, Sept. 5, 1970, 29416 A/70
Int. Cl. B65g 15/14, 47/24
U.S. Cl. 198—33 AA 4 Claims

A loading device particularly for feeding screw blanks and the like rough-shaped pieces to a processing machine comprising a hopper, a base, an upright supported on said base defining part of a wall of said hopper, a slot defining a path comprising a substantially horizontal section on the bottom of said hopper and an ascending section in said upright, an endless driven chain with spaced pushing means movable below said slot, and auxiliary means provided at the upper extremity of

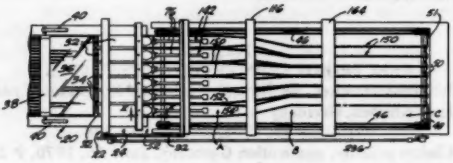


said path for advancing said blanks at a greater linear translation velocity than that of said chain.

3,741,368
EGG PACKING MACHINE

Harvey Z. Burkholder, Ephreta, Pa., assignor to U.S. Industries, Inc., New York, N.Y.

Division of Ser. No. 863,893, Oct. 6, 1969. This application Mar. 11, 1971, Ser. No. 123,430
Int. Cl. B65g 43/08
U.S. Cl. 198—37 8 Claims



An improved egg packing apparatus orienting eggs into columns and rows so that a carton can be packed by vacuum lifting the eggs positioned with the pointed end downward. To insure that each row is filled as it advances into the machine, a vacuum switch is actuated when vacuum builds up due to the closing of openings to the atmosphere by the presence of an egg on a spring-biased hinged platform positioned in each column adjacent to an accumulating table which is delivering the eggs to the apparatus. Also, a gate otherwise blocking the egg on the platform is cam-actuated out of the way when the filled row is advanced by engaging rollers.

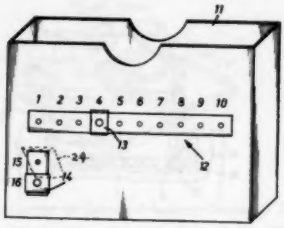
3,741,369
CONVEYOR ADDRESS SYSTEM

Erich Schneider, Wiesensteig, Germany, assignor to Organisation Ralfs KG, Wiesensteig (Wurtt), Germany

Filed Aug. 17, 1971, Ser. No. 172,527
Claims priority, application Germany, Sept. 1, 1970, P 20 43 254.6
Int. Cl. B65g 43/08
U.S. Cl. 198—38 9 Claims

A belt conveyor wherein containers are transported between successive stations. The containers and the stations are provided with a primary address system comprising a predetermined destination selected for the discharge of the containers. Empty containers are distributed by a method comprising providing the containers with a second address, continuously circulating the empty container on the conveyor

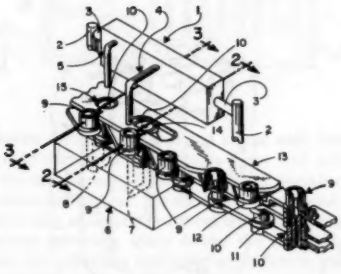
and providing at least some of the stations with selectively operable means for sensing the second address. The sensing means being operated in response to the selected need of certain stations. Apparatus is also provided to effect the actuation of the secondary address system cooperatively with the primary address system.



3,741,370
APPARATUS FOR CONVEYING AND FILLING CAPSULES

Van B. Hostetler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 1, 1972, Ser. No. 230,683
Int. Cl. B65g *17/16*
U.S. Cl. 198—131 **6 Claims**



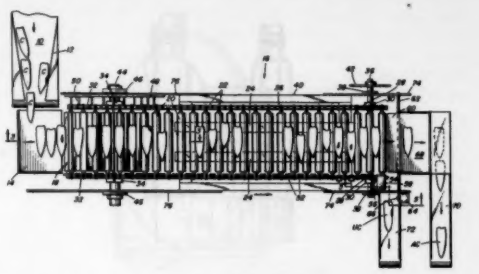
Improvement to an apparatus for conveying and filling capsules comprising a means for ejecting unmated cap and body sections from capsule receiving means after the cap and body portions of said receiving means have been forced into a misalignment to expose the body section to a liquid or particulate matter filling operation.

3,741,371
APPARATUS FOR INSPECTING AND SELECTING PRODUCTS

C. G. Peter Oldershaw, Avon, and Don deKramer, Lima, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 4, 1971, Ser. No. 112,531
Int. Cl. B65g *43/00*
U.S. Cl. 198—38 **6 Claims**

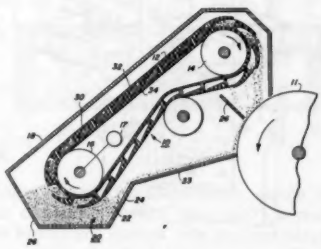
Apparatus for inspecting and selecting generally cylindrical products such as husked ears of corn. The apparatus comprises conveyor means, in-feed regulating means, product rotating and translating means, mechanical memory means and product separating means. The apparatus is especially useful in the inspection of generally cylindrical products, typically agricultural commodities and specifically husked ears of corn, where it is desirable to examine all of the surface of individual units of such products and to divert selected products to a different path from that of the others.



3,741,372
CONVEYOR FOR DEVELOPER APPARATUS

Robert E. Hewitt, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 28, 1971, Ser. No. 157,249
Int. Cl. B65g *17/12, 17/16*
U.S. Cl. 198—140 **1 Claim**



Apparatus for conveying two-component developer material from a developer sump to an elevated location for cascade development in a xerographic reproducing machine. The apparatus includes an endless flexible belt having a series of cavities transverse to the direction of its movement. The belt passes over a drive pulley located in the sump area and a second pulley located at a higher elevation. The belt cavities which normally are in a closed position when in a relaxed state will open as they move around the pulley. As the belt passes the curvature of a lower drive pulley, the cavities will open and then close entrapping the developer material scooped up in the sump area. When the cavities are again forced open to release the entrapped material at the higher elevation onto an input chute for being cascaded across the xerographic surface to be developed.

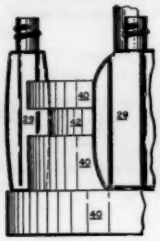
3,741,373
TURRET FOR CARRYING CONTAINERS

Friedrich H. Geurtsen, and Fred J. Wochner, both of Holliston, Mass., assignors to Dennison Manufacturing Company, Farmingham, Mass.

Division of Ser. No. 856,946, Sept. 11, 1969. This application Dec. 3, 1971, Ser. No. 204,758
Int. Cl. B65g *29/00*
U.S. Cl. 198—209 **11 Claims**

A plastic turret for transporting bottles, the turret having two tiers, one being a bottom cylindrical tier and the other being a top cylindrical tier, the top tier being of a smaller diameter less than the base tier, and the top tier having a plu-

rality of spaced apart recesses for positioning bottles, the recesses extending the entire height of the top tier and open at



the top with the top surface of the bottom tier forming the support for the bottom of bottles positioned within the recesses.

3,741,374

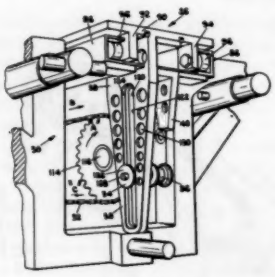
MATERIAL HANDLING DEVICE

Donald L. Hufford, Charlevoix, Mich., assignor to Hufford Industries, Inc., Charlevoix, Mich.

Filed Sept. 30, 1971, Ser. No. 185,052

Int. Cl. B65q *25/08*

U.S. Cl. 198—221 **18 Claims**



The drive mechanism for a sheet metal loader having a reciprocating carriage adapted to receive blanks and parts and feed them into a press includes a pusher mechanism mounted on a continuous sprocket driven chain moving forward and backward along an upper and lower path in a vertical plane. First and second rollers project from each side of the chain for engagement in a pair of spaced yokes having elongated vertical slots for receipt of the roller. One of the yokes and slots extends the full vertical spacing of the chain for continuous confinement of the first roller to move the carrier continuously and reciprocally. The other yoke and slot terminate above the sprocket axle with the lower end open to accommodate insertion and removal of the second roller for driving engagement during the forward drive movement of the carriage. The carriage and guide are adjustable to accommodate various size parts or material.

3,741,375

MAGAZINE FOR STORAGE OF CASSETTES CONTAINING CONVOLUTED MOTION PICTURE FILM

Friedrich Winkler, and Johann Zanner, both of Unterhaching, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

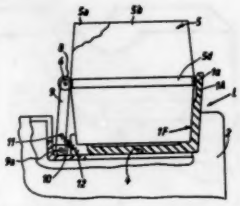
Filed Jan. 19, 1971, Ser. No. 107,751

Claims priority, application Germany, Jan. 24, 1970, P 70 02 456.5

Int. Cl. B65d *5/50, 85/67*

U.S. Cl. 206—1 R **10 Claims**

A magazine in the form of an elongated tray has a compartment for reception of a stack of cassettes for storage of convoluted motion picture film. Each cassette has a casing consisting of two mirror symmetrical shells and a circumferential groove in its external surface. One side wall of the magazine constitutes a carrier for a series of elastic positioning elements each of which engages a separate shell in the compartment to prevent stray movements of cassettes while the magazine is



moved with reference to a motion picture projector to place a selected cassette into a projection position. The positioning elements resemble disks, rollers, tongues and/or solid or hollow cushions, and the carrier is normally biased to an operative position in which its positioning elements bear against the adjoining shells.

3,741,376

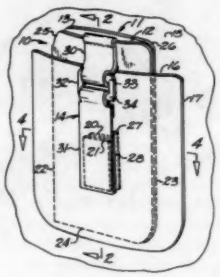
POCKET HOLDER WITH MAGNETIC CLASP

Robert G. Brown, deceased, late of East Alton, Ill.; by Gertrude T. Brown; Robert C. Brown, both of Ridgewood, N.J., and Gene Louise Grant, Cheyenne, Wyo. (heirs), assignors to Magni-Case, Inc., Overland, Mo.

Filed Oct. 8, 1970, Ser. No. 79,116

Int. Cl. A45c *11/04*

U.S. Cl. 206—5 R **4 Claims**



This holder includes a case receivable within a pocket. A flexible clasp having interconnected upper and lower portions is attached to the case, the connection providing for compound hinge action between the upper and lower clasp portions. The underside of the clasp and the front face of the case each carry mutually attractive magnetic elements. The pocket material is held between the flexible clasp and the case by magnetic force, and the clasp provides a means of withdrawing the holder from the pocket.

3,741,377

CONTACT LENS CASE

Norman L. Krellen, 316 Jones Road, Vestal, N.Y.

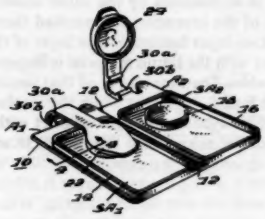
Filed June 4, 1971, Ser. No. 150,069

Int. Cl. A45c *11/04*

U.S. Cl. 206—5 A **2 Claims**

A plastic contact lens case of a size and thickness suited to the storing of large stocks and/or inventories of contact lenses,

in pairs or single lens, in orderly array and in readily identifiable manner in the drawer of a commercial photo-slide file case, and being adapted for sending contact lenses, either as



contact lens blanks or as finished lenses, through the mail in regular mailing envelopes, and also for use by contact lens wearers as a pocket and/or hand-bag carrying and/or an overnight storage case therefor.

3,741,378

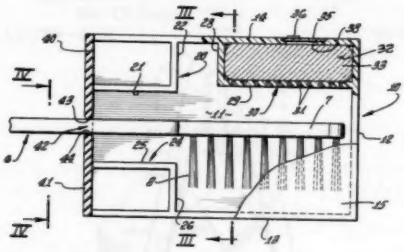
PROTECTOR FOR A TOOTHBRUSH OR THE LIKE

Milton Parker, 3100 S. Western Avenue, Los Angeles, Calif.

Filed Feb. 8, 1971, Ser. No. 113,539

Int. Cl. A45d *44/18*

U.S. Cl. 206—15.1 E **2 Claims**



The protector for a toothbrush has a rear wall, having integrally formed transverse walls, has a front wall adhesively secured to the transverse walls to complete an open ended enclosure, and has resilient end flaps across the open end thereof to form a sanitizing agent compartment containing a sanitizing agent, a bristle receiving space below the sanitizing agent compartment for collecting sanitizing agent fumes, guides for guiding the bristle end of the toothbrush into the bristle receiving space, and an opening for receiving the bristle end of the toothbrush therethrough, whereby the bristle end and the bristles passing through the opening along the guides into the bristle receiving space, while the flaps close about the handle to retain the fumes of the sanitizing agent around the bristle and bristle end of the toothbrush.

3,741,379

PACKAGE

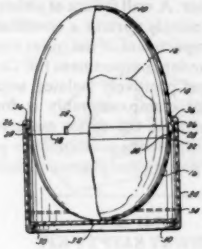
Hermann Kappler, Statesville, and Robert A. Wellons, Jr., Charlotte, both of N.C., assignors to Niemand Industries, Inc., Statesville, N.C.

Filed Mar. 1, 1971, Ser. No. 119,733

Int. Cl. B65d *85/18*

U.S. Cl. 206—46 AP **10 Claims**

A hollow egg-shaped container for an article, formed of two parts fitted together along a seam about the widest diameter of the container, is disposed partially within a cylinder so that the seam is surrounded by the cylinder. One end of the cylinder is spun inwardly so as to engage the container and prevent removal of the container from that end. The other end of the cylinder is also spun inwardly and a circular disc is disposed between the container and the spun end to hold the container in place and to prevent removal of the container from that end of the cylinder. The cylinder has a circumferential perforated



seam so that the cylinder may easily be broken to remove the container and allow access to the article contained therein.

3,741,380

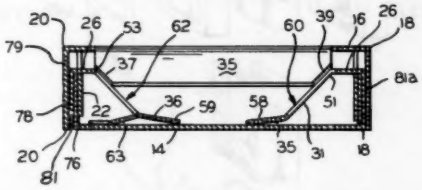
SHOCK ABSORBING PAPERBOARD PACKAGE

Henry B. Carney, Chicago, Ill., assignor to Associated Packaging, Inc., Chicago, Ill.

Filed June 23, 1971, Ser. No. 156,002

Int. Cl. B65d *5/50*

U.S. Cl. 206—45.14 **6 Claims**



A cardboard or paperboard container, carton or package (hereinafter collectively called "package") is made from a single blank having top, bottom, side, and end panels. In addition to these panels, the blank also includes a floating center panel which cooperates with angular side panels to form an inner carton which floatingly supports a product displayed in the package. If the package is dropped, the floating panel tends to absorb the shock.

3,741,381

SAFETY PACKAGE ASSEMBLY AND DIVIDES CLAMP THEREFOR

John T. Thompson, 2331 20th Street, Los Angeles, Calif., and George W. Gillemont, 244 Loring Street, Santa Monica, Calif.

Division of Ser. No. 869,504, Oct. 27, 1969. This application Feb. 24, 1971, Ser. No. 118,398

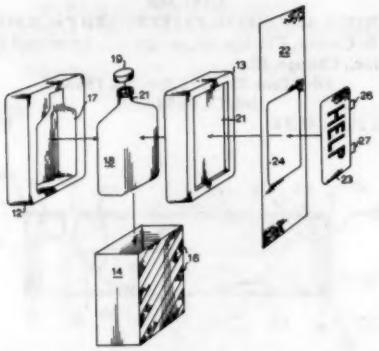
Int. Cl. B65d *77/08*

U.S. Cl. 206—47 A **10 Claims**

A safety package assembly for isolating chemically reactive constituents until ready for intermixing comprising inner and

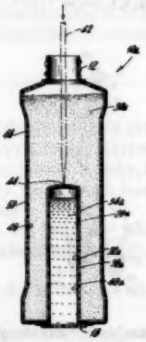
outer tubular containers, the opposite ends of the inner container being charged with proper quantities of the two reactive constituents and previously held isolated by a detachable divider clamp assembly applied crosswise of the collapsed mid-portions of said container. A wall failure at either or both ends of the inner container merely permits a constituent to escape into the contiguous compartment of the outer container. Even when both ends of the inner compartment fail the constituents are retained captive and positively isolated until removal of the clamp. The divider clamp assembly is formed of differentially resilient materials, the stiffer more resilient outer member having sharp edged ribs positioned to press the container walls against the softer inner clamping member.

3,741,382
HIGHWAY SAFETY KIT
Robert W. Larimer, Sr., 7967 Poplin Drive, Santee, Calif.
Filed June 9, 1971, Ser. No. 151,430
Int. Cl. B65d *79/00*
U.S. Cl. 206—47 R **1 Claim**



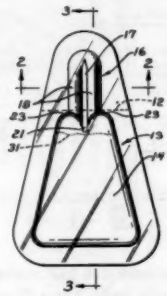
A highway safety kit having a small plastic container of gasoline surrounded by a two-piece plastic foam protective case one of which has a recess therein for carrying a sheet of material with a high visibility color with a tear-out center section having a distress message thereon for taping to a vehicle in distress, the remainder being worn by an occupant of the vehicle; and a slip cover dimensioned for receiving and retaining the assembled package therein.

3,741,383
DISPLAY BOTTLE HAVING FRANGIBLE INNER COMPARTMENT
John C. Wittwer, Armonk Road, Mount Kisco, N.Y.
Filed Apr. 10, 1972, Ser. No. 242,384
Int. Cl. B65d *79/00*
U.S. Cl. 206—47 A **6 Claims**



A unitary container for shipping and storing a liquid and a non-liquid (e.g., a powder), or two incompatible materials one of which has solvent properties. The materials are normally separated in the container and can be mixed when desired. The container includes a first chamber for storing the liquid and a second chamber for storing the non-liquid material. One of the chambers is surrounded by the other chamber, and in one embodiment of the invention is separated therefrom by a wall formed of a two-layer laminate. One layer of the laminate which is in contact with the liquid material is impervious to the liquid but penetrable. The inner layer of that laminate is rigid but soluble in the liquid, such that when the insoluble layer is pierced, the soluble layer comes into contact with the liquid and can thereupon be mixed with the liquid. In another embodiment of the invention, the container wall is formed of a two-layer laminate in which the inner layer is soluble and normally in contact with the non-liquid material. When the outer wall comes into contact with the liquid, its inner layer is thereby dissolved, and the normally rigid container wall thereupon becomes flexible and compressible.

3,741,384
INDIVIDUAL SPRINKLE-PACKET WITH RIBBED BREAK-OPEN NECK
Charles E. Cloud, Wilmette, Ill., assignor to Cloud Machine Corporation, Skokie, Ill.
Filed Dec. 3, 1971, Ser. No. 204,436
Int. Cl. B65d *83/00*
U.S. Cl. 206—56 AA **3 Claims**

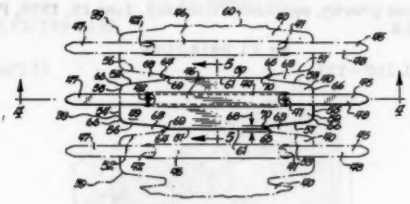


An individual sprinkle-packet for salt, pepper, sugar and the like is in the class comprising a pocketed plastic sealed along its edges to a paper backing, which can be bent back along a given line to rupture the plastic and provide one or more sprinkling openings. This invention, in preferred form, provides a pocket tapering and reducing to a narrow neck. Along the longitudinal center line of the neck, the plastic is depressed to form an inward rib which stiffens the neck, and supports its humped portions to ensure rupturing. The rib portion extends slightly into the pocket body, so that breakage adjacent to the pocket forms two small sprinkling apertures.

3,741,385
FASTENER DEVICE
Joseph T. Corey, Williamsville, N.Y., assignor to Permclip Products Corporation, Buffalo, N.Y.
Continuation-in-part of Ser. No. 22,519, March 25, 1970, Pat. No. 3,644,632. This application Feb. 10, 1972, Ser. No. 225,207
Int. Cl. B65d *69/00*; **B42f** *3/00*
U.S. Cl. 206—56 AB **12 Claims**

A fastener device for fastening papers or the like to a backing member including a strip or prong member having a central portion and bendable prong end portions on which papers are to be impaled and an overlay member for fixing the strip member to the backing member. The overlay member has an intermediate portion adapted to overlie the central portion of the strip member and also has end portions having a pair of apertures through which the prong end portions ex-

tend. The overlay member has adhesive on its lower surface to bond it to the central portion of the strip member to thereby retain it in position so that it will not become misaligned in handling prior to the time that the overlay member is adhesively secured to the backing member. The fastener devices are fabricated on a web and coiled into a roll from which single fastener devices are adapted to be severed incidental to the process of securing each fastener device to a backing member.



3,741,386

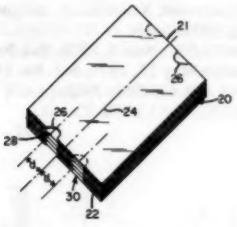
X-RAY FILM PACKAGE

Gunter Schmidt, Malibu, Calif., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 52,980, July 7, 1970. This application Apr. 22, 1971, Ser. No. 136,530

Int. Cl. B65d *85/00, 85/30, 85/62*

U.S. Cl. 206—62 R **10 Claims**



A package comprising a light-proof envelope or bag containing a plurality of X-ray film sheets stacked for co-operation with a dispensing machine and useful in a daylight handling system for daylight loading and unloading of cassettes. The film sheets are identical and may have a photographic emulsion layer on one or both surfaces. The adjacent films in the stack have their surfaces in contact. Each sheet has a cut-away portion along one edge thereof for coacting with a film selector cam. In the stack, the sheets are alternated so that the cut-away portions lie along a common stack edge and are arranged in two parallel rows. The cut-away portions in adjacent sheets are in different rows and in superposition. After the package is in a dispenser, the envelope or bag is stripped from the stack so that the sheets can be removed one at a time from the stack and passed into film holders or cassettes engaged with the dispensing machine.

3,741,387

SLIDE-SLEEVE PACKAGE

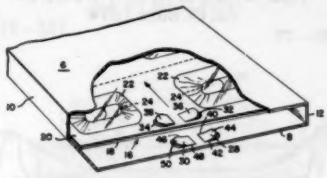
Alten E. Whitecar, Westville, N.J., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Apr. 27, 1971, Ser. No. 137,869

Int. Cl. B65d *13/06, 73/00*

U.S. Cl. 206—79 **5 Claims**

A slide-sleeve package has a pair of openings in the slide and a pair of tongues in the sleeve passing through the openings. The tongues, extending in opposite directions and transversely to the axis of the sleeve, engage the walls of the openings to provide a resistance to the axial movement of the slide.



3,741,388

METHOD FOR EFFICIENTLY SEPARATING SLURRY-STATE LIQUID INTO SOLID PART AND LIQUID PART AND AN APPARATUS THEREFOR

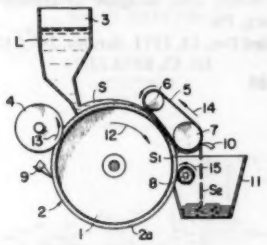
Kenji Takahashi, Suita, Japan, assignor to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1971, Ser. No. 169,330

Claims priority, application Japan, May 17, 1971, 46/32412

Int. Cl. B01d *33/04*

U.S. Cl. 210—67 **11 Claims**

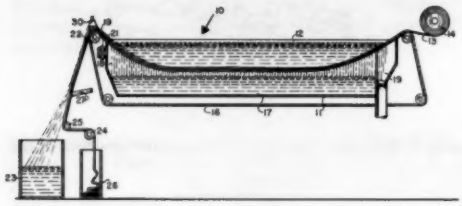


A foam having inter-communicating fine pores throughout has a high liquid absorbing power and is rich in liquid-holding ability. When a slurry-state liquid is poured onto the surface of a liquid-permeable filter structure provided with such a porous layer having a good elastic recoverability from its compressed state, the liquid part of said slurry is absorbed in the foam structure due to the capillary action of the pores, whereas the mud-like solid part (wet cake) suspended in the slurry is retained on the surface of the porous layer in coagulated fashion and thus it is separated from the liquid part. By positioning a transfer means having a substantially even and smooth work surface so as to be in appropriate contact with the resulting layer of the solid part deposited on the sheet surface, the said solid part is transferred from the said sheet surface onto the work surface of the transfer means and is deposited thereon. Therefore, by causing this sheet structure to make continuous circulatory movement and also causing the transfer means which is positioned close thereto to move continuously at roughly the same speed and in the direction corresponding to the moving filter structure, and by continuously pouring the slurry-state liquid onto the foam surface, it is possible to continuously separate the said slurry into the solid part and the liquid part with a high efficiency. If the separating apparatus is arranged so that the filter structure is mounted on the circumference of a rotary drum body, the separating apparatus will conveniently have a compact size, requiring only a small floor area and space for its installation.

3,741,389
FILTERING APPARATUS

Herbert S. Anderson, Briarcliff Manor, assignor to Anaconda Wire & Cable Company, New York, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,920
Int. Cl. B01d 33/14
U.S. Cl. 210—77 5 Claims

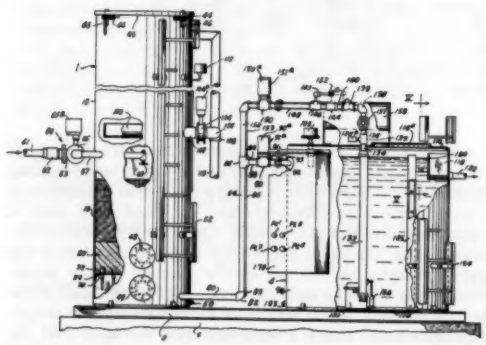


An adherent filter cake is removed from areas of a filter cloth by progressively suspending the cloth and beating the reverse side. The beater bars are shaped in undulations so that different bars strike different points across the width of the cloth.

3,741,390
TERTIARY FILTER

Grover L. Wallace; Thomas D. Ward, and Paul R. Johnson, all of Mineral Wells, Tex., assignor to Harsco Corporation, Wormleysburg, Pa.

Filed Dec. 13, 1971, Ser. No. 207,111
Int. Cl. B01d 23/24
U.S. Cl. 210—80 13 Claims

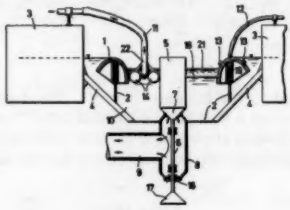


A method and apparatus for filtering liquid wherein contaminated liquid is delivered selectively to first and second filter tanks having filter media disposed therein. The contaminated liquid, filtered through one of the filter tanks, is delivered to a backwash storage tank where a predetermined volume of filtered liquid is maintained. When the filter in the first tank becomes partially clogged with solid particles removed from the contaminated liquid, flow of contaminated liquid is diverted to a second filter tank and liquid which has been filtered is pumped from the backwash storage tank through the first filter for cleaning. An automatic control system is provided for automatic switching of flow between the first and second filter tanks and for controlling the backwash cycle.

3,741,391
APPARATUS FOR ELIMINATING OIL SLICKS FROM LARGE BODIES OF WATER

Ferdinand Philipp Donsbach, Rudesheimer Str. 35b, 655 Bad Kreuznach, Germany

Filed Jan. 13, 1971, Ser. No. 106,202
Claims priority, application Germany, June 19, 1970, P 20 30 209.4
Int. Cl. B01d 23/00
U.S. Cl. 210—123 12 Claims

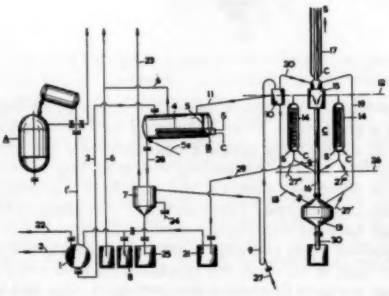


Water contaminated with an oil slick is drawn into and confined within a large tub shaped vessel so that the lighter contaminating liquid can be drawn off at the top while the water is pumped away from a lower level.

3,741,392
APPARATUS FOR THE PURIFICATION OF WASTE WATER

Marco Adegeest, Zandvoort, Netherlands, assignor to Corodex N.V., Zandvoort, Netherlands

Division of Ser. No. 87,557, Nov. 6, 1970, Pat. No. 3,655,047.
This application May 25, 1971, Ser. No. 146,830
Int. Cl. C02c 5/02
U.S. Cl. 210—180 6 Claims

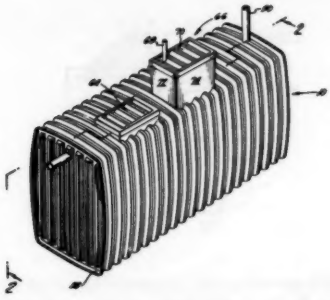


Apparatus for the removal of impurities from waste waters resulting from the manufacture of phenol/formaldehyde resins. Such apparatus includes a mixing tank with lines to feed it with contaminated water, acid, and phenol. The tank discharges to a heatable reservoir which has a gravity drain to a settling tank as well as an off-take for gaseous products and a bleed-off line from an intermediate zone for conveying fluids to an overflow tank. That tank has a return line to the reservoir and a gravity drain for liquid resin. It is connected also to an expansion boiler which is heated by fluid from heat exchange units. A stack removes vapor upwardly and a gravity drain conducts liquid resin downwardly to a storage vessel. A bleed-off line from an intermediate zone in the last mentioned drain to an acid recovery vessel may be added, if desired. Air injectors are installed as needed to maintain circulation.

3,741,393
AERATION SEPTIC TANK

James Estes, and George A. Laird, both of Santa Ana, Calif., assignors to Aeration Septic Tank Company, Gunnison, Colo.

Filed Feb. 22, 1972, Ser. No. 228,045
Int. Cl. B03d 1/00
U.S. Cl. 210—195 9 Claims

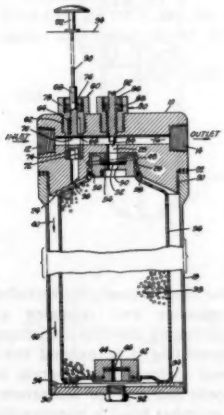


A rigid lightweight septic tank construction employs a corrugated tubular shell, corrugated end walls and intermediate bulkheads that separate the tank into three functionally distinct major chambers. A panel extending from an opening formed in one of the bulkheads separates one of the tank chambers into two clarifying and settling compartments from which the treated sewage may be discharged.

3,741,394
LIQUID FILTERING APPARATUS

Loyd F. Defenbaugh, 21 E. Valerio Street No. 4, Santa Barbara, Calif.

Filed July 7, 1971, Ser. No. 160,414
Int. Cl. B01d 35/02, 29/08
U.S. Cl. 210—282 4 Claims

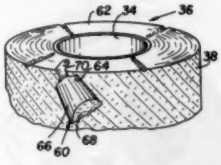


A liquid filtering apparatus primarily intended for the filtering of water comprising a housing which includes means for inserting the apparatus in the water line, wherein removable cartridges may be inserted containing suitable filtering means such as activated carbon particles, there being a three-way diverter valve operable to divert water flow through the filtering substance or straight through the apparatus bypassing the filtering substance. The device also includes a metering valve for controlling the back pressure within the unit in order to maximize contact between the fluid and the filtering material.

3,741,395
DISPOSABLE HUMAN BLOOD DIALYSIS DEVICE

Lester Zimmerman, Hicksville, N.Y., assignor to Vernitron Medical Products, Inc., Great Neck, N.Y.

Filed Mar. 11, 1971, Ser. No. 123,232
Int. Cl. B01d 31/00
U.S. Cl. 210—321 7 Claims

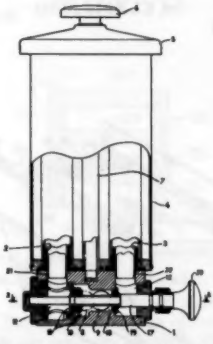


A dialysis device for handling human blood in an artificial kidney system using an improved interleaved, wrapped arrangement of the tubular blood-filtering membrane and its supporting mesh which cooperate to provide the filtering body thereof, wherein the membrane inlet and outlet are confined against rupturing movement and the helical wrap of the membrane is supported by the mesh without a severe change in direction, thereby minimizing the introduction of a flow resistance force that can not be readily controlled.

3,741,396
WATER PURIFYING APPARATUS

Jacques Muller, 123 Avenue du General de Gaulle, La Garenne-Colombes, France

Filed Sept. 21, 1971, Ser. No. 182,423
Claims priority, application France, Oct. 16, 1970, 7037363
Int. Cl. B01d 29/42
U.S. Cl. 210—335 6 Claims



A water purifying apparatus comprising a body portion supporting a tank containing a plurality of hollow filter elements, the body portion having an inlet port adapted to be connected to a source of untreated water and a discharge port adapted to be connected to the system to be supplied with water, the body portion containing valves which may be manually controlled to direct the untreated water either through the filter elements into the discharge port, or directly to the discharge port.

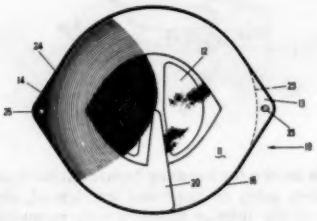
3,741,397
PAINT STRAINER

Louis M. Gerson, Middleboro, and William G. Simmons, Walpole, both of Mass., assignors to Louis M. Gerson Co., Inc., Middleboro, Mass.

Filed Aug. 9, 1971, Ser. No. 170,123
Int. Cl. B01l 23/28
U.S. Cl. 210—497 1 Claim

A paint strainer has a generally conical body formed of a thin imperforate sheet material such as paper. The body has a

plurality of cutouts covered by straining screen means with a filling opening defining a preselected circumference. A plurality of diametrically opposed tabs at 180° locations are integrally formed with the body and extend outwardly from the filling opening. Each of the tabs defines a base line extending over a distance corresponding to at least 17½ percent of the



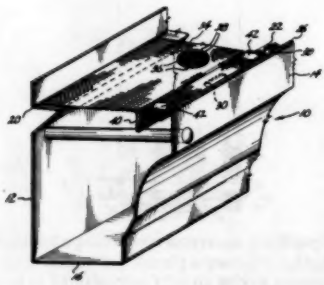
circumference of the filling opening. The tabs can be perforated or scored to allow them to be bent over a support structure or removed entirely. The tabs having a wide base, enhance the load carrying characteristics of the body when hand or mechanically held by the tabs. Buckling, wrinkling and sagging are thus eliminated when the strainer body is filled.

3,741,398

ROOF GUTTER AND PROTECTOR

Stanley L. Abramson, 17253 S.W. Kelok Road, Lake Oswego, Oreg.

Filed Dec. 29, 1971, Ser. No. 213,496
Int. Cl. B01d *23/00*
U.S. Cl. 210—474 **3 Claims**



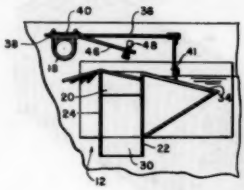
A combination roof gutter and an elongated mesh screen overlying the gutter for preventing debris from collecting therein. The sides of the gutter have flanges extending longitudinally therealong adjacent their upper edges, which flanges support opposite longitudinal edges of the screen. The screen includes elongated parallel wires extending longitudinally of the screen and interwoven cross wires extending transversely of the screen. The cross wires are deformed along lines paralleling the longitudinal wires to form a crease in the screen which projects downwardly into the gutter. The crease directs water down and into the gutter. A raised shoulder extends continuously along an outer edge of the flange farthest from the roof to prevent water flowing along the screen from overflowing the edge of the gutter.

3,741,399

SKIMMER MECHANISM FOR A WASTE FLOTATION CELL

Ronald L. Peterson, Richmond, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 19, 1971, Ser. No. 126,190
Int. Cl. B01d *21/06*
U.S. Cl. 210—525 **5 Claims**



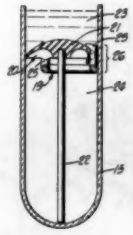
A skimmer blade is utilized to gather scum from the surface of a tank and convey same up a ramp into a collection trough. The blade is preferably mounted on two flexible members attached to a driven support arm for this purpose. The flexibility, length and cross-section of the blade supporting members can be chosen for proper depth of entry into the floating material and proper contact with the ramp.

3,741,400

BLOOD SAMPLE CONTAINER

John M. Dick, 5360 Burlingame Avenue, Los Angeles, Calif.

Filed June 15, 1970, Ser. No. 46,168
Int. Cl. B01d *21/26*
U.S. Cl. 210—516 **6 Claims**



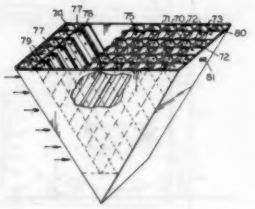
A generally tubular shaped container includes an expandable head valve member and retaining clip assembly therewithin. On centrifuging the clip is disengaged from the valving member, permitting it to expand toward the inner walls of the container to form two separate compartments, one for the blood cells and one for the serum. During centrifuging, the valve member head is temporarily deformed at its edges an amount sufficient to allow the cells to move therepast, and at the conclusion of centrifuging the head resumes sealing engagement with the container wall. The serum may then be simply poured out of the container for testing.

In a further aspect, the tubular container has a spring-loaded valving member disposed at substantially the mid-point thereof. In a still further form, filter means are located within a test tube, through which serum can pass, but blood cells cannot.

3,741,401
PERFORATED TUBE MODULE FOR LIQUID TREATMENT

Andrew K. Hsiung, Corvallis, Oreg., assignor to Neptune Microfloc Incorporated, Corvallis, Oreg.

Filed Nov. 26, 1971, Ser. No. 202,228
Int. Cl. B01d 21/00
U.S. Cl. 210—519 7 Claims

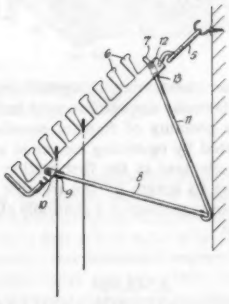


A device for liquid treatment, such as for separating settleable particles from liquid, comprises a set of spaced apart generally parallel inclined perforated sheets forming settling compartments therebetween. Means are provided to distribute an influent liquid so as to impinge substantially uniformly on the first of said sheets and thereafter flow through the perforations therein from the first of such settling compartments uniformly and sequentially to the last thereof. Withdrawal means for the effluent are positioned adjacent the top of the last settling compartment, whereby the liquid flows upwardly through the compartments as it passes sequentially from the first to the last. The particles in the liquid settle out on the sheets whence they slide downwardly therealong to the bottoms thereof into sludge collecting and withdrawing means positioned therebelow.

3,741,402
SUSPENSION UNITS FOR FILES

Sidney Major Russell, Southdown House, Southdown Road, Shawford, Winchester, England

Filed Oct. 20, 1971, Ser. No. 190,888
Claims priority, application Great Britain, Dec. 4, 1970, 57,623/70
Int. Cl. B42f 15/00
U.S. Cl. 211—104 2 Claims

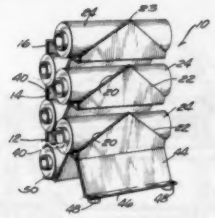


The invention provides a device for stowing suspended files comprising a frame which can hang vertically to support a number of files in substantially vertical overlapping relationship and which can be set by strut means to lie at an angle to the vertical or horizontally for easy identification and removal of selected files.

3,741,403
ROLL FILM DISPENSER

Ernest W. Fleischer, Jr., and Rodney M. Greene, both of 2508 East Bellview Place, Milwaukee, Wis.

Filed Oct. 29, 1970, Ser. No. 85,156
Int. Cl. B26f 3/02
U.S. Cl. 211—135 8 Claims

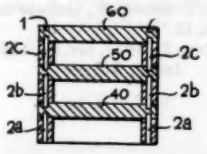


A roll film dispenser having a base unit provided with a storage roll trough and an upwardly and forwardly located dispensing trough supports additional units to form a vertical array of staggered dispensing and storage troughs for rolls of perforated sheet film. Each unit is formed from a single piece of sheet material with angularly related converging portions forming the troughs. The forward walls of the dispensing troughs are at a sufficient angle with the vertical to eliminate the need for a core weight.

3,741,404
INTERLOCKING FURNITURE

Leon Joseph Jourdain, Rue du Vieux-Moulin 2, Maransart, Belgium

Filed July 1, 1971, Ser. No. 158,791
Claims priority, application Belgium, July 1, 1970, 752821
Int. Cl. A47f 5/00
U.S. Cl. 211—148 4 Claims



A flexible shelf arrangement is provided having a plurality of shelves maintained in spaced parallel, horizontal position by a plurality of vertical parts of equal height disposed therebetween. The shelves are each provided with a plurality of orifices which are vertically aligned with the corresponding orifices on the other shelves. An equal number of vertical uprights extend into the orifices to maintain the lateral stability of the arrangement. Grooves are provided in the vertical parts and in the upper and lower surfaces of each shelf to hold a side panel in a vertical position.

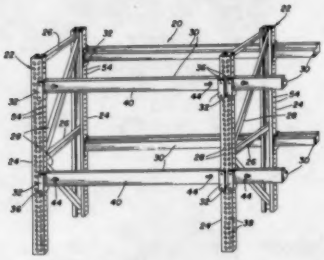
3,741,405
LOAD LOCK

Kennedy McConnell, Riverdale, and Raymond F. Juechter, Glenwood, both of Ill., assignors to Interlake, Inc., Chicago, Ill.

Filed July 20, 1971, Ser. No. 164,343
Int. Cl. A47f 5/10; F16b 17/00
U.S. Cl. 211—177 27 Claims

The load lock of the present invention is to lock the beam of a pallet rack structure to an upright of an end frame and includes an L-shaped bolt having a shank slidably extending through aligned holes in the upright and an end plate of the beam and having a headed handle portion extending through a

contoured slot in the beam wall adjacent the end of the beam. The handle portion is encircled by a generally cylindrical spring metal retainer having a pair of extensions embracing the bolt between the shank and the handle portion, having diametrically opposed projecting tabs engaging the inner face of the beam wall adjacent the slot and with cooperation of the head to prevent removal of the load lock, and having projections engageable with the edges of the contoured slot to hold



the load lock in any adjusted position of the shank with respect to the hole through which it extends in the beam end plate. The load lock is so constructed than when properly inserted in a contoured slot with its shank projecting into the beam end plate opening it cannot be removed. A modified form of beam slot is made long enough to permit removal of the shank from the beam end plate hole and the removal of the load lock from the slot; a load lock movement limiting device is provided to prevent this from being done unintentionally.

3,741,406

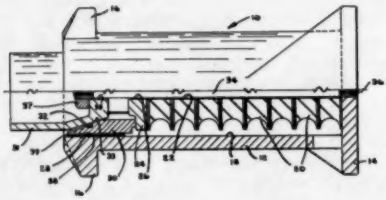
FRICTION DRAFT GEAR

David G. Anderson, Evanston, Ill., assignor to Miner Enterprises, Inc., Chicago, Ill.

Filed June 22, 1971, Ser. No. 155,542

Int. Cl. B61g 9/10

U.S. Cl. 213—22 **8 Claims**



A friction draft gear having a housing closed at one end, resilient means in the housing, and a friction clutch in the open end of the housing which is adapted to provide both a relatively smooth or constant friction action and a highly efficient, substantially square-wave work curve. The friction clutch has a friction bore with an inward taper which may vary from a few degrees to zero degrees, at least one set of friction shoes disposed circumferentially in the friction bore, nonmetallic friction material disposed intermediate the friction shoes and the friction bore, and a wedge member engageable with the friction shoes and adapted to receive impact forces.

3,741,407

CONVERTER HANDLING VEHICLE

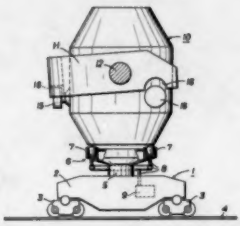
Ronald Spannlang, Linz-Ebelsberg, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Aug. 2, 1971, Ser. No. 167,936

Claims priority, application Austria, Aug. 6, 1970, 7154

Int. Cl. C21c 1/00

U.S. Cl. 214—1 D **2 Claims**



The invention relates to a converter handling vehicle for transporting a converter and for positioning a converter into and removing it from a tiltable carrying ring, comprising a vehicle frame arranged on bogies, a liftable and lowerable carrying platform, a plurality of hydraulically operable lifting aggregates for receiving the converter and pressure spaces in said aggregates communicatingly connected by a common conduit for supplying a pressure agent. By means of these lifting aggregates it becomes possible to adapt the converter to an inclined or slanting position of the carrying ring when the converter is being put into position.

3,741,408

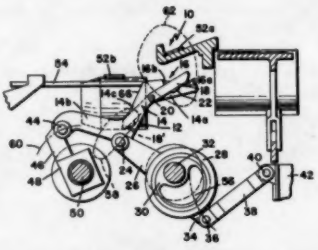
TRANSFER APPARATUS

Kenneth L. Klusmier, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Aug. 2, 1971, Ser. No. 168,276

Int. Cl. B65g 7/00

U.S. Cl. 214—1 QG **4 Claims**



An apparatus for transferring elongated elements from a first location to a laterally disposed second location. The apparatus includes a plurality of transfer members which are pivotally manipulated by operating means in a manner such that an elongated element at the first station is engaged at spaced points along its length by the transfer members and carried along the upper portion of a generally elliptical path to the second location.

3,741,409

TRANSFER APPARATUS FOR ARTICLES WITH A VERTICAL PASSAGE

Paul C. Painter, Natrona Heights, Pa., assignor to Freeport Brick Company, Freeport, Pa.

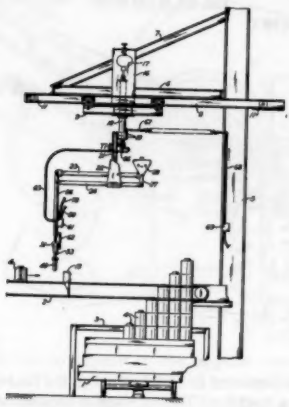
Filed Dec. 1, 1971, Ser. No. 203,721

Int. Cl. B66c 1/66

U.S. Cl. 214—1 BC **10 Claims**

An inflator head provided with an opening through it is supported for vertical and lateral movement. Secured to the head

around its opening is the open upper end of a resilient bag that extends downwardly from the head for insertion in an article having a vertical opening in it. There are means connected with the head opening for delivering air under pressure to the



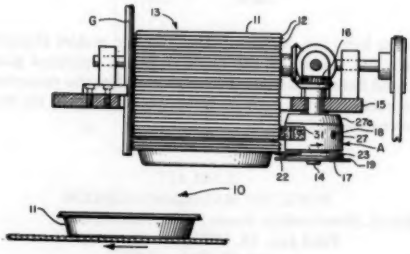
bag to inflate it and for releasing the air pressure from the bag. Means are also provided for raising the head-supporting means so that after the bag has been inflated in an article to grip the wall of the opening therein the article can be picked up by the bag and transferred to another location.

3,741,410

SEPARATOR

Ernest J. Henschke, Des Plaines; George H. Logemann, Mundelein; Stanley Moorad, Niles, and Lino P. Savio, Glenview, all of Ill., assignors to Ekco Products, Inc., Wheeling, Ill.

Filed Mar. 24, 1971, Ser. No. 127,445
Int. Cl. B65g *59/10*
U.S. Cl. 214—8.5 K **8 Claims**



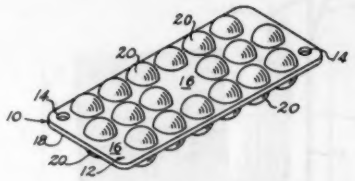
A separator unit for sequentially denesting the lowermost container from an upright stack of nested-like containers, each having an outwardly projecting rim at the mouth thereof. The unit includes a first driven rotor with which the rim of the lowermost contaiker has downward engagement along the surface of a segmental ledge extending from the first rotor pending rotation of the rotor through an arc to withdraw the ledge from the rim, and a blade on a second rotor with which the rim of the lowermost container is engaged and gradually pushed downwardly to separate the lowermost container from the stack when the flange of the first rotor is withdrawn from engagement with the rim of the lowermost container. The second rotor is coupled to the first rotor for rotation in unison with the first rotor about a common axis while allowing the second rotor to have limited movement relative to the first rotor along the common axis.

3,741,411

MOLDED CUSHION PAD INSERTABLE BETWEEN HEAVY PANELS

Bobbie D. Peacock, c/o MA Industries, 2350 Sylvan Road, Forest Park, Ga.

Filed Oct. 4, 1971, Ser. No. 186,233
Int. Cl. B65g *1/14*
U.S. Cl. 214—10.5 R **1 Claim**



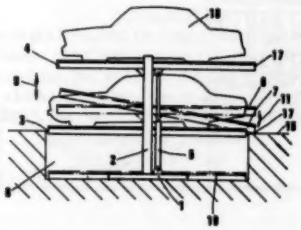
A molded plastic cushion pad for insertion between respective heavy panels such as precast concrete, architectual slabs used in building construction and the like. The pad is placed between such heavy panels when panels are stacked against each other so as to prevent damage, permit the circulation of air and so forth. A typical plastic pad is molded from polyethyelene about the size of a man's wallet and is rectangular in formation with large protruding, hemispherical bumps on both sides making the pad also about the thickness of a man's wallet. The main body of the pad is a thin flat sheet of polyethelene and the hemispherical bumps are molded intricately therewith. Heavy concrete slabs may be stacked one on the other vertically with the present cushion pad therebetween.

3,741,412

DEVICE FOR THE PARKING OF VEHICLES ON SEVERAL PLATFORMS ARRANGED ABOVE EACH OTHER

Kaspar Klaus, Schlachthofstrasse 46, Memmingen, Germany

Filed Mar. 8, 1971, Ser. No. 122,083
Int. Cl. E04l *6/06*
U.S. Cl. 214—16.1 ED **7 Claims**



The invention concerns a device for the parking of vehicles on several platforms, arranged above each other, with incline and hoisting equipments for all platforms.

3,741,413

STRUCTURE FOR HANDLING STACKED FLAT ARTICLES

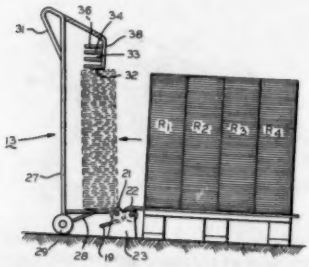
James J. Friel, Audubon, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Nov. 8, 1971, Ser. No. 196,482
Int. Cl. B65g *67/02*
U.S. Cl. 214—41 **10 Claims**

A plurality of vertical stacks of flat articles, such as carton blanks or the like, are arranged in upright rows on a flexible pallet pad in turn resting upon a pallet. A free end of the pallet pad is trained through a pair of nip rolls which advance the

first row of the stack onto a structure which is then rocked to a position where each stacked pile of such row falls against a stop mounted on the frame so that each pile is in a particular imbricating relationship. The stops are staggered so that each pile varies in imbrication to prevent the blanks of one pile from interleaving with the blanks of an adjacent pile.

The structure referred to may be part of a vehicle arranged



to move between the stacked pallet and a blank feeding machine.

The vehicle may be moved to a stand with the piles arranged as described, and pusher means engages one side of the outermost pile on the vehicle to push as desired a remote one of the piles onto a conveyer structure of a blank feeding machine, all the while maintaining the blanks of one pile from interleaving with blanks of an adjacent pile.

3,741,414

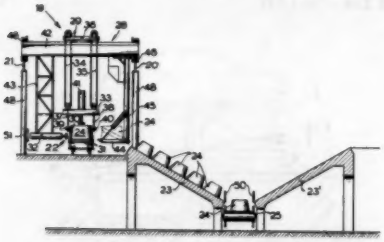
INSTALLATION FOR COOLING CALCIUM CARBIDE RUN OFF INTO VESSELS

Johannes Krause, Hermulheim, and Wilhelm Portz, Erftstadt Kierdorf, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Division of Ser. No. 24,542, April 1, 1970. This application Jan. 11, 1972, Ser. No. 217,063

Int. Cl. B65g *67/24*

U.S. Cl. 214—44 R **10 Claims**



The invention provides an installation for cooling calcium carbide run off into vessels,comprising a rail system carrying trucks which serve as tapping vessels and are disposed under and at a distance from the tapping level of the calcium carbide furnaces,a movable device for ejecting the carbide blocks from the trucks, and a plurality of juxtaposed inclined planes which are constructed as chutes and the upper ends of which are disposed near a portion of the rail system which extends rectilinearly over a substantial length, while their lower ends lead to a conveyor belt. The trucks each have an upper portion which is lifted from a flat base to allow the blocks to be pushed off onto the chutes when they are cooled to a surface temperature of about 500°C to 600°C at which they are only partially solidified and just able to retain their block form without being supported laterally. The exposed blocks then rapidly cool to a temperature of about 200°C on the chutes which are overlapped to provide vents between them for the passage of cooling air below, between and above them.

3,741,415

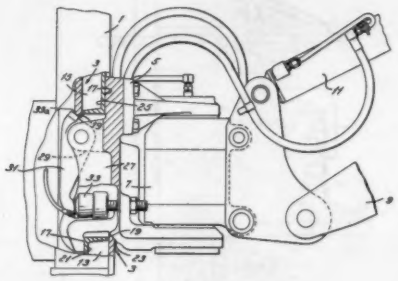
VEHICLE CARRYING AN IMPLEMENT

Lewis R. Lee, Basildon; Robert S. D. Whybro, Hullbridge, and William A. Bennett, Hornchurch, all of England, assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 10, 1972, Ser. No. 225,081

Int. Cl. B66f *9/00*

U.S. Cl. 214—138 C **4 Claims**



A carriage is disclosed to be attached to the rear of a tractor for supporting a backhoe. The carriage is slidably mounted on a transversely extending slideway and locked by one or more levers which are pivotally mounted on the carriage and rockable to engage the slideway.

3,741,416

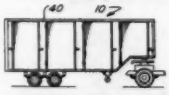
FOAM HANDLING APPARATUS AND METHOD

Patrick J. Bilbow, Wilkes-Barre, Pa., assignor to Lyn-Weld Co., Inc., Wilkes-Barre, Pa.

Filed Dec. 21, 1970, Ser. No. 99,790

Int. Cl. B60p *3/00*

U.S. Cl. 214—152 **7 Claims**



Foam buns are compressed for storage and/or shipment to reduce the volume of the buns. A power operated platen is disposed between adjacent buns to equalize the compression. Compression of the buns preferably takes place in the body of an over-the-road vehicle.

3,741,417

POULTRY HANDLING SYSTEM

Milton O. Blankenship, Route No. 2, Canton, Ga.

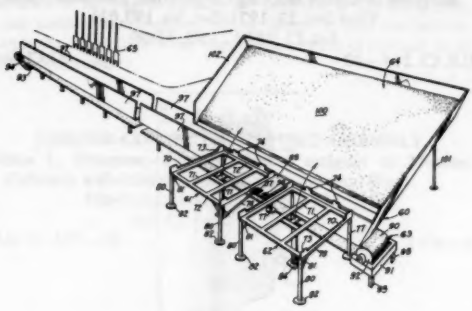
Filed Jan. 19, 1971, Ser. No. 107,771

Int. Cl. B65g *65/30*

U.S. Cl. 214—314 **5 Claims**

A receiving station having an upwardly open operable conveyor surface for conveying poultry to be processed from one location along a predetermined path to a second location is provided with an adjustable support platform means movable between operable and inoperable positions for effecting a transfer of poultry by gravity from a container means onto the conveyor surface in response to the platform being moved to the operable position. Padded guide means is provided on an opposite lateral side edge of the conveyor means from the adjustable platform means for absorbing the impact of poultry deposited thereon and for effecting a guided movement of the deposited poultry onto the conveyor means. The conveyor means is operable for effecting a transfer of the poultry deposited thereon from a first location adjacent the operable platform to a second location adjacent suspension means used for conveying poultry through a processing operation. Special

container means is provided for transporting poultry from poultry growing facilities to the receiving station. The container means is detailed to be supported on the platform



means and for movement to the angular oriented operable position for effecting a transfer of poultry by gravity from within the container means onto the conveyor and padded guide means.

3,741,418

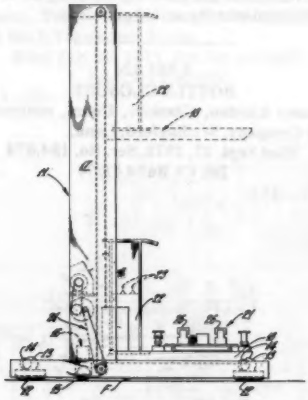
MATERIALS HANDLING VEHICLE

Reynold F. Gamundi, Lyndhurst, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 17, 1972, Ser. No. 235,738

Int. Cl. B60p 1/02

U.S. Cl. 214—512 **14 Claims**



A load lifting vehicle including a shuttle which can be rotated free of the load to provide end loading and unloading. The shuttle assembly is mounted on a rotatable platform such that the shuttle table can be extended to either side of the vehicle transversely to the path of travel, or toward one end thereof parallel to the path of travel. Load-receiving pads capable of supporting the load are provided so that relative vertical movement of the shuttle table and the pads will free the shuttle of the load. The shuttle assembly can then be rotated 90° to provide end loading.

3,741,419

SHELF LOADER FOR LONG MATERIALS

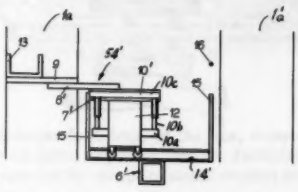
Klaus-Peter Bergerhoff, Waldheim Kr. Aachen, and Theobald Becke, Hagen, both of Germany, assignors to Demag Aktiengesellschaft, Duisberg, Germany

Filed Aug. 19, 1970, Ser. No. 65,227

Claims priority, application Germany, Oct. 10, 1969, P 19 51 143.4

Int. Cl. E04h 6/06

U.S. Cl. 214—730 **1 Claim**



A shelf loader for long materials comprises an elongated frame which is movable on wheels between shelf compartments and which carries a lift frame which is movable upwardly and downwardly on a side thereof. The lift frame provides a stand for one or more operators and it includes a telescoping member having a load carrier thereon which may be shifted laterally in a direction toward the shelf compartments for the purpose of lifting long elements from the shelves or inserting them on shelves. In one form the load carrier is attached to the lifting frame by hinged braces which permits it to be lifted upwardly and shifted laterally, and in another arrangement it is carried on a car which may be moved transversely along the lifting frame from one shelf side to an opposite shelf side. The lifting frame is adapted to carry a removable hoist. The load bearing platform is advantageously carried on a support truss which is vertically movable in order to shift the load off the carrier to permit the shifting movement of the carrier and the realignment of the load therewith at a laterally spaced location. The load carrier itself includes transversely shiftable portions so that the load may be shifted by a combination of movements of the shiftable load carrier portions and the lifting truss.

3,741,420

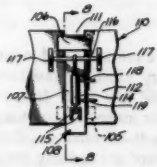
LOAD HANDLING IN FORK LIFT TRUCKS

Thomas N. Melin, 1424 24th Avenue, Longview, Wash.

Division of Ser. No. 801,137, Feb. 20, 1969, Pat. No. 3,589,541, which is a continuation-in-part of Ser. No. 439,846, March 15, 1965, Pat. No. 3,429,470. This application Feb. 25, 1971, Ser. No. 118,845

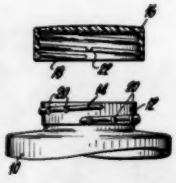
Int. Cl. B65g 47/00

U.S. Cl. 214—750 **1 Claim**



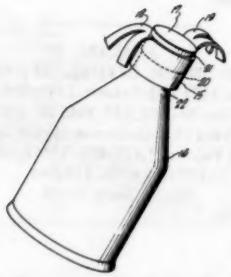
A slope-piling arrangement for a fork-lift truck in which one of the lifting forks has its vertical leg movably engaged with the fork apron so that the fork leg, during movement relative to the apron, is constrained to move vertically, and in which a power drive mechanism is connected between the apron and the fork for moving the fork relative to the apron.

3,741,421
SAFETY LOCKING CAP
John C. Wittwer, RFD No. 2, Mount Kisco, N.Y.
Filed May 10, 1971, Ser. No. 141,613
Int. Cl. B65d 41/04
U.S. Cl. 215—9 2 Claims



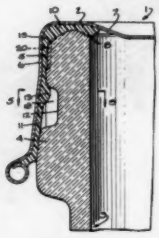
A self-locking and sealing cap and bottle in which cooperating locking elements in the form of lugs and detents are provided on the matching threads of the cap and the bottle. A plurality of locking elements is provided on at least one of the bottle and cap, to thereby ensure that engagement of that one locking element with a corresponding element on the other member is achieved when the cap is tightly secured on the bottle. The locking lugs may be shaped with one edge tapered in the direction of rotation of the cap to permit ready rotation of the cap in that direction.

3,741,422
METHOD AND MEANS FOR SECONDARY CLOSURE
Robert A. Wold, and Anthony P. Higgins, both of Fremont, Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Filed July 19, 1971, Ser. No. 163,781
Int. Cl. B65d 41/00, 43/02; B65b 7/00
U.S. Cl. 215—38 A 11 Claims



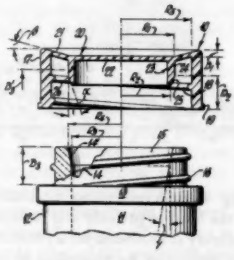
Described herein are methods and means for providing containers with secondary closures resistant to the passage of moisture, bacteria and the like. Heat recoverable tubular members having one or more integral tear tabs and preferably provided with a hot melt adhesive or other sealant material on the inner surface thereof are radially inwardly heat recovered about the generally cylindrical neck portions of containers provided with a primary closure such as a cap. The tear tab is preferably provided with a stress-raising characteristic positioned to resist tearing during radial recovery of the secondary closure and to facilitate removal of the same when the container is to be opened. Simultaneously with or following heat recovery the container, including the container-primary closure interface about which the tubular member is recovered, is sterilized.

3,741,423
PRESS-ON TWIST LIFT-OFF CONTAINER SEALING MEANS
Daniel D. Acton, and George J. Foss, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio
Filed Oct. 27, 1971, Ser. No. 193,031
Int. Cl. B65d 23/00, 53/00
U.S. Cl. 215—40 23 Claims



A closure cap is described which is pressed without rotation onto a cooperating container to initially seal it. The cap is removed from the container by a twisting and lifting motion and may thereafter be snapped back onto the container to reseal it. The rim of the container has an interrupted circular slot with radially outwardly directed camming ramps between the slot sections. The closure cap has a plastisol lined skirt including anchoring portions which enter into the slot sections after the press-on sealing operation to hold the closure cap in place. The portions of the gasket entering the slots may be preformed on the gasket or they may be formed during sealing as bulges in the gasket material resulting from a deformation of the gasket during sealing. The outwardly directed ramps facilitate cap removal by wiping off the gasket anchoring positions when the cap is twisted on the jar permitting the cap to be lifted off. Where the cap is used for a vacuum seal, an additional vacuum breaking venting groove may be included in the glass finish. The venting groove is filled with the gasket compound during sealing to provide a hermetic seal and when the cap is twisted during removal, the twisting motion carries the gasket material out of the groove permitting air to pass under the cap gasket and into the sealed package.

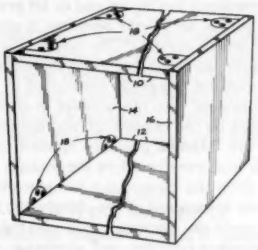
3,741,424
BOTTLE CLOSURE
William James Landen, Cheshire, Conn., assignor to Eyelet Specialty Company, Wallingford, Conn.
Filed Sept. 27, 1971, Ser. No. 184,074
Int. Cl. B65d 41/04
U.S. Cl. 215—43 R 8 Claims



The invention contemplates a single-piece molded-plastic screw cap for secure liquid-sealing of the contents of a bottle, which may be of glass or molded-plastic construction. The seal action is established at a non-plugging interference between (a) an annular flange within the cap and (b) a flared mouth or

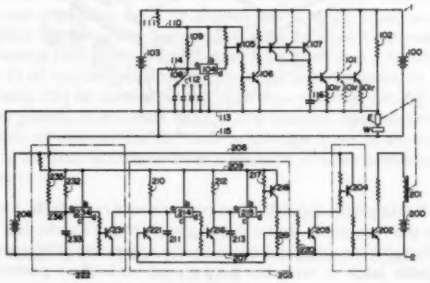
tapered counterbore in the bottle opening. The cap arrangement is such, in relation to bottle-neck dimensions, that a strong axial force is generated by local deformation of the cap, to increasingly load the seal contact in the course of threaded advance of the cap to its fully set position; at the same time, local resilient deformation of the flange at seal contact expands the seal action from essentially a circle of contact to an annulus of contact.

3,741,425
CORNER-CONNECTED CABINET ASSEMBLY
Dixon L. Freeman, Tacoma, Wash., assignor to Monitor Cabinets, a division of Comerco, Inc., Tacoma, Wash.
Filed Aug. 16, 1971, Ser. No. 172,167
Int. Cl. B65d *13/00, 9/12*
U.S. Cl. 217—12 **3 Claims**



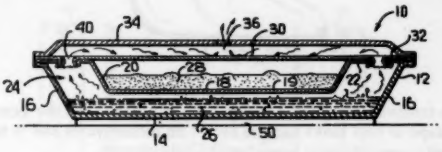
A cabinet assembly includes a pair of end pieces, a top piece and a bottom piece, each provided with cooperating pairs of marginal recesses. Angled connectors seat in and are secured to the recesses, locating the pieces in cabinet-forming relation.

3,741,426
SPARK-DISCHARGE SURFACE TREATMENT OF A CONDUCTIVE WORKPIECE
Kiyoshi Inoue, Tokyo, Japan, assignor to IJR (Inoue-Japox Research Inc.), Yokohama, Japan
Filed July 28, 1971, Ser. No. 166,685
Int. Cl. B23k *9/04*
U.S. Cl. 219—76 **21 Claims**



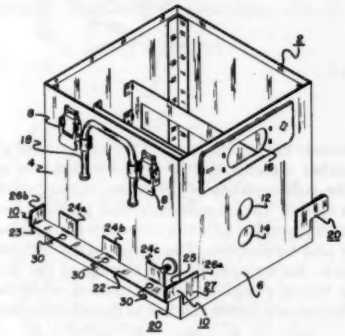
Method of and apparatus for the surface treatment of a workpiece or substrate, e.g., to fuse material thereto, wherein an electrode is brought into iterative contact with the workpiece to form an interface and an electrical pulse is applied across the interface. A circuit network responsive to the interface impedance controls an electronic switch to deliver the pulses when the impedance is in the proper range of impedance values.

3,741,427
DOUBLE BOILER FOOD TRAY
Diane J. Doyle, Western Springs, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 8, 1971, Ser. No. 113,281
Int. Cl. A47j *27/10*
U.S. Cl. 220—13 **7 Claims**



A double boiler food tray, or the like, wherein a cover is fastened to an inner tray such that the fastening means also provides a vent for the escape of steam created during heating.

3,741,428
VIBRATION RESISTANT CASE AND MOUNTING BRACKET
John Martin Evjen, and Leonard Ronald Dinkler, both of Gainesville, Fla., assignors to General Electric Company, Owensboro, N.Y.
Filed Aug. 12, 1970, Ser. No. 63,182
Int. Cl. B65d *25/24*
U.S. Cl. 220—18 **1 Claim**

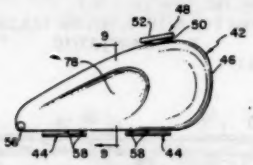


A structure is provided comprising a thin-wall metal rectangular parallelopiped case having at least one mounting bracket welded to the case. The mounting bracket is designed to be bonded to at least two surfaces of the case so that vibrational forces having vectors along all three axes will be resisted by adhesion means in shear in the planes of the thin walls to provide lower stresses for equivalent vibrating forces.

3,741,429
BICYCLE CANTEEN
Jack A. Purcell, Jr., Taylor; Jerome A. Leonard, Walled Lake, and John S. Juratovic, Detroit, all of Mich., assignors to Bort, Inc., Hazel Park, Mich.
Filed Jan. 25, 1971, Ser. No. 109,498
Int. Cl. B65d *25/24*
U.S. Cl. 220—18 **5 Claims**

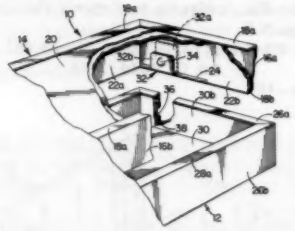
A bicycle canteen having a unitary rigid structure is provided with a universal clamping means for securing the canteen to either singular or dual membered main crossbars of a bicycle. The canteen is secured along the main crossbar of a bicycle between the forward end of the seat and the handlebar fork member. A combination inlet cap and cup is provided to

seal the canteen making it liquid-proof after the canteen is filled and provide a cup to act as a receptacle when the liquid



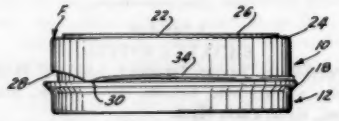
is removed from the canteen. The canteen takes the general shape of fuel tanks such as found on motorcycles and is basically speed-form or aero-dynamically shaped.

3,741,430
CONTAINER
George G. Bergh, 1 Peck Road, R.F.D. 3, Plainville, Mass., and Robert G. Bergh, 77 Metcalf Road, North Attleboro, Mass.
Continuation-in-part of Ser. No. 122,566, March 1, 1971, abandoned. This application Jan. 3, 1972, Ser. No. 214,688
Int. Cl. B65d *43/16*
U.S. Cl. 220—38 **3 Claims**



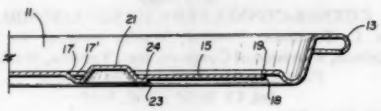
A container having base and lid sections, one of which has a wall member dimensioned to be surrounded by and nested within the wall member of the other section when the container is closed. The container further includes hinge means providing a pivotal connection between the wall members of the base and lid sections. The hinge means defines a pivotal axis which, during opening and closing of the container, is movable laterally relative to one section while being fixed against lateral movement relative to the other section.

3,741,431
CONTAINER WITH SNAP-OPEN COVER
Ralph V. Burdick, Colonial Green, Loudonville, N.Y.
Filed Apr. 1, 1971, Ser. No. 130,267
Int. Cl. B65d *43/04*
U.S. Cl. 220—43 P **2 Claims**



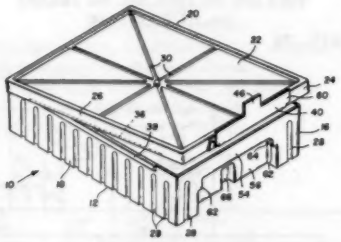
A container having a snap-open cover in which the cover is provided with a skirt having a single acruate cut-away portion, curled edge for strengthening and improved fulcrum zones joining the cut-away portion and curled edge which cooperates with a flattened peripheral ledge on the container bottom to facilitate opening in a snap action.

3,741,432
CONTAINER WITH CLOSURE TAB AND PRESSURE RELEASE TAB ON CLOSURE TAB
Elmer D. Werth, Arvada; Nelson E. Sipe, Denver, and Ronald A. Pearce, Lakewood, all of Colo., assignors to Coors Container Company, Golden, Colo.
Filed Jan. 20, 1972, Ser. No. 219,258
Int. Cl. B65d *51/16*
U.S. Cl. 220—44 **9 Claims**



A beverage container having an end or lid provided with an opening which serves as a pour opening, a pressure release vent and an air intake opening. The opening is covered by a depressible closure tab separable from the container end except at a hinge portion integrally connected to the container end. A pressure release vent tab, smaller in area than the closure tab, is located on the closure tab and hingedly connected to said closure tab. Manual pressure applied to the pressure release vent tab and transferred to the closure tab separates the release tab from the closure tab to open the release vent and facilitate easy separation of the closure tab from the container end to expose the opening in the end for simultaneous discharge of container contents and admission of air into the container. The pressure release tab may also function as a vacuum release means.

3,741,433
BOX HAVING A CARRYING HANDLE-LATCH
Ralph C. Bentley, Canadaigua, and James R. Burroughs, Long Island, both of N.Y., assignors to Voplex Corporation, Pittsford, N.Y.
Filed Mar. 15, 1971, Ser. No. 123,993
Int. Cl. A47j *27/08, 36/10*
U.S. Cl. 220—55.7 **8 Claims**

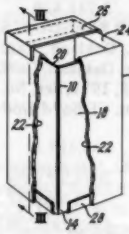


A thin plastic rigidified box comprising a receptacle, a cover for the receptacle, and a detent and carrying handle-latch for releasably securing the cover to the receptacle. The carrying handle latch is movable between an unlatched position in which the cover may be readily removed from the receptacle, and a latched position in which the latch serves the dual function of releasably securing the cover to the receptacle and providing a carrying handle for the box. The carrying handle-latch comprises a flexible arm having a handle forming hook latch for latching onto a shoulder on the receptacle, and one or more auxiliary flap latches integral with the arm that are forced past a flange and into a notch in the receptacle for greatly increasing the force required to move the hook latch to its unlatched position.

3,741,434
TRASH DISPOSAL DEVICE

Robert E. Traverse, 706 Washington Street, Dorchester, Mass.

Filed Feb. 22, 1971, Ser. No. 117,441
Int. Cl. B65d 25/14, 25/34
U.S. Cl. 220—65 2 Claims

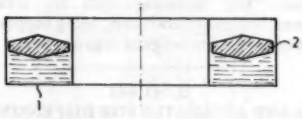


A trash disposal device adapted for sink-side use in a plurality of modes comprises a rectangular open-topped container fitting within a rectangular open ended body member having at its upper end a reentrant flange overlying the rim of and extending into the container to prevent particles entering between the member and the container or a liner therefor.

3,741,435
BOTTLING MACHINES

Albert Adelin Mathieu Auguste Collon, Brussels, Belgium, assignor to Vickers-Vandergeeten Societe Anonyme, Brussels, Belgium

Filed May 12, 1971, Ser. No. 142,630
Claims priority, application Belgium, May 14, 1970, 750,409
Int. Cl. B65d 87/20
U.S. Cl. 220—93 6 Claims



A bottling machine for filling bottles with a liquid under the action of pressure gas includes a single reservoir (1) for the liquid and pressure air, such reservoir being provided with a float (2) serving to prevent contact of the pressure air with the liquid and to prevent the formation of waves on the liquid surface when the machine is started or stopped. The float may take various forms, for example it may be formed as a hollow body (3) of revolution made of non-oxidizable material, as a solid body (5) of revolution made from a material having a specific gravity of less than one, or as a buoyant open section (7) made of non-oxidizable steel. In another form of the invention, the float is formed from a plurality of interconnected sections (8).

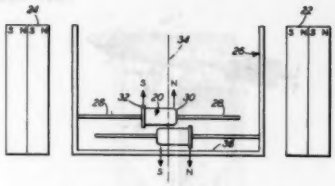
3,741,436
HANDLING OF MAGNETICALLY ASYMMETRICAL ARTICLES

Ernst F. Hartline, Reading; Donald M. Large, Temple, both of Pa., and Gregory E. Montone, Alexandria, Va., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed May 14, 1971, Ser. No. 143,511
Int. Cl. B23q 7/12
U.S. Cl. 221—156 17 Claims

Articles having axial leads, such as diodes, are handled by initially storing the articles within a magnetic bin and feeding the articles from the bin with a magnetic wheel. The articles are magnetic but they are not "magnetically symmetrical."

The magnetic asymmetry causes a tangling of the articles when they are suspended within the storage bin. A number of techniques are provided to eliminate the tangling: the field strength of the bin is reduced, the field is biased to one side of the bin and the bin walls are placed close together to constrain the articles.

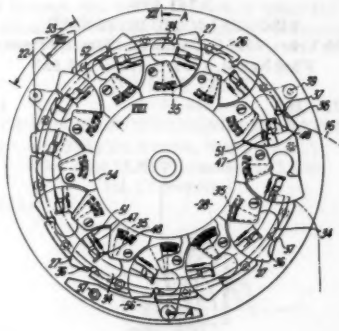


Additional improvements in handling are achieved by operating a magnetic feed wheel with discrete high angular-acceleration steps so that the articles which are not singularly attracted to pickup locations on the wheel are shaken free of the wheel by the stepping action. Thus, uniform feeding of the articles is achieved.

3,741,437
SEED DISPENSER HAVING SPRING BIASED SEED SELECTORS

Walter H. Ward, Vereeniging, Transvaal, South Africa, assignor to South African Farm Implement Manufacturers Limited, Vereeniging, Transvaal, South Africa

Filed Oct. 4, 1971, Ser. No. 185,978
Claims priority, application Great Britain, Oct. 8, 1970, 47,979/70
Int. Cl. A01c 7/20
U.S. Cl. 221—219 6 Claims

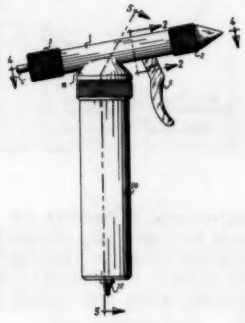


A seed dispenser including a seed reservoir with its lower portion connected to a seed hopper, a fixed annular seed guide having a seed discharge opening and a plurality of seed selector elements mounted on a rotatable mounting plate. The seed selector elements select seeds from the lower portion of the seed reservoir and slide the seeds along the seed guide to the discharge opening where they are ejected. The fixed annular seed guide includes a frusto-conical surface and a cylindrical surface. The seed selector elements have seed-engaging surfaces which cooperate with the frusto-conical surface to push and guide seed along the frusto-conical surface. A cam is provided to rotate the seed selector elements relative to the rotatable mounting plate to allow seed to enter the space between the seed-engaging surfaces and the annular seed guide. The annular seed guide may include a recessed portion to dislodge excess seeds carried by the selector elements. The axis of rotation of the rotatable mounting plate may be slightly offset from the axis of the annular seed guide to assist in dislodging excess seeds.

3,741,438
PASTE GUN

Paul Joseph Gardioni, 7100 Viau Street, Apt. 809, Montreal, Quebec, Canada

Filed June 22, 1971, Ser. No. 155,486
Int. Cl. B05b 15/00
U.S. Cl. 222—96 6 Claims

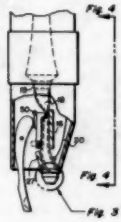


A paste gun comprising a body, a nozzle for dispensing the paste at one end of the body, a casing removably attached to the body and adapted to contain a supply of the paste material to be dispensed, means to pressurize said casing whereby the paste will be dispensed under air pressure, a manually-operated trigger depending from the body and adapted to open a valve located in the nozzle at the discharge opening to start and stop the dispensing of the paste. Preferably, the air pressure is built up in the casing by means of a hand-operated air pump. The air pump can be removed and a check valve prevents discharge of the air from the casing.

3,741,439
VISCOUS LIQUID DISPENSER

Roger Keith Vehrs, 4515 E. Cambridge Street, Fresno, Calif.

Filed Nov. 4, 1971, Ser. No. 195,557
Int. Cl. B65d 35/28
U.S. Cl. 222—103 10 Claims

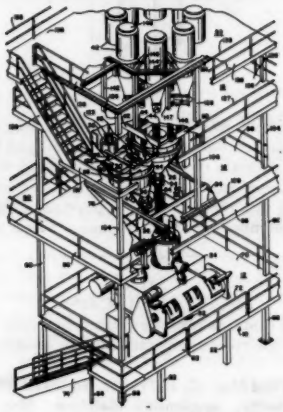


A viscous liquid dispenser suitable for dispensing the contents of collapsible tubes comprising a reservoir adapted to hold a viscous liquid, a length of elastic tubing connected at the upstream end thereof to said reservoir and having a high modulus of resilience, a wall means spanning at least a portion of the length of said elastic tubing and positioned adjacent thereto, a lever moveable with respect to said elastic tubing wherein both arms of said lever may be moved to wedge a portion of said elastic tubing against said wall means, the upstream portion of said moveable lever pressing said elastic tubing against said wall means before the downstream portion of said moveable lever presses said elastic tubing against said wall means to force said viscous liquid in the downstream direction where it is expelled from the orifice at the downstream end of said length of elastic tubing, and a closure means positioned adjacent said elastic tubing and above said downstream orifice to prevent viscous liquid from leaking from said orifice when said device is not in use and to prevent air from entering said elastic tubing after the expelling stroke of said lever so that additional viscous liquid is drawn by suction into said elastic tubing, said closure means being overridden by the movement of said viscous liquid during said expelling stroke.

3,741,440
MODULAR BLENDING SYSTEM

William I. Sanders, Jr., Oakland, Calif., assignor to De Met Engineering Company, Oakland, Calif.

Filed Nov. 5, 1971, Ser. No. 195,957
Int. Cl. B67d 5/60
U.S. Cl. 222—132 7 Claims

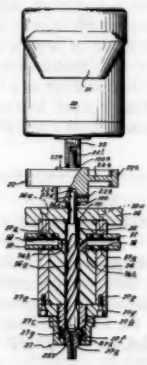


Easily assembled and disassembled modular blending plants are provided having demountable operative units organized to permit ready modification of capability and capacity of the blending plant. The modules are organized into a rectangular superstructure. The operating units are arranged in a predetermined vertical relationship, being supported by platform cross beams of a predesigned organization.

3,741,441
METHOD AND APPARATUS FOR DISPENSING EPOXY

William J. Eberle, P.O. Box 1262, Reading, Pa.

Filed Dec. 2, 1970, Ser. No. 94,478
Int. Cl. B67d 5/62
U.S. Cl. 222—135 11 Claims



A method and apparatus for mixing and dispensing liquid resin and catalyst in predetermined quantities for filling battery case tops or similar devices wherein the contents of, and

the connections thereof, are encased and sealed in solidified resin material. The device has a mixing and dispensing head in which a convoluted member is rotatably disposed for mixing and delivering a mixture of resin and catalyst toward a discharge opening. The convoluted member has a valve member on the lower end thereof and is movable longitudinally of the head toward and away from a valve seat in the discharge opening for opening and closing same.

3,741,442

APPARATUS FOR MIXING AND DISPENSING DIFFERENT PARTICULATES MATERIALS IN ACCURATELY CONTROLLABLE PROPORTIONS

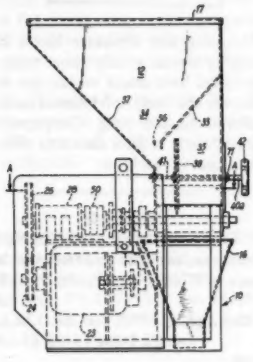
Derek Burtt Hargreaves, Adlington, and Eric Staniforth, Macclesfield, both of England, assignors to National Research Development Corporation, Macclesfield, England

Filed June 16, 1971, Ser. No. 153,683

Claims priority, application Great Britain, June 17, 1970, 29302/70

Int. Cl. B67d *5/52*

U.S. Cl. 222—142 **3 Claims**



There is disclosed apparatus for mixing and dispensing at least two different particulate materials in accurately controllable proportions comprising at least two containers, metering means associated with each container adapted continuously to receive particulate material from its container, drive means for said metering means, means for adjusting the metering capacity of at least one of said metering means, and means for dispensing together all the particulate material issuing from said metering means to a desired location. The metering means preferably consists of a pair of rollers disposed to form a nip through which material reaching the upper side thereof is dispensed at a rate depending upon the speeds and directions of rotation of the rollers, their surface characteristics and their relative dispositions and sizes, and comprising means for adjusting the length of nip exposed to material in the associated container and thereby the metering capacity of the rollers. The means for adjusting the length of the nip may conveniently comprise a vertical shutter lying at right angles to the roller axes and in close-fitting relationship with the walls of the container and the rollers and means for adjusting the position of the shutter longitudinally of the rollers. In the preferred embodiment disclosed there are three containers each with metering means consisting of roller pairs, two being provided with means for adjusting the length of nip exposed.

3,741,443

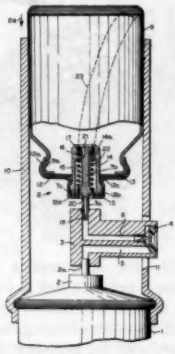
DISPENSING SYSTEM WITH PROPELLANT METERING VALVE

Jean Marand, Saint-Benoit, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 19, 1970, Ser. No. 90,896

Int. Cl. B65d *83/14*

U.S. Cl. 222—145 **1 Claim**



A product container has a valve coupled to one flow passage of a coupler-aspirator. A second flow passage is coupled to a hollow section of a propellant metering valve stem. The stem is movable within the chamber of a valve body member. The member is sealed to a propellant cartridge. An aperture in the hollow section of the stem is without the chamber when the metering valve is closed, but within the chamber when the metering valve is open. The stem has a solid section having a slot on the outer periphery thereof. Communication between the interior of the cartridge and the chamber through the slot is unblocked when the metering valve is closed, but is blocked when the metering valve is open.

3,741,444

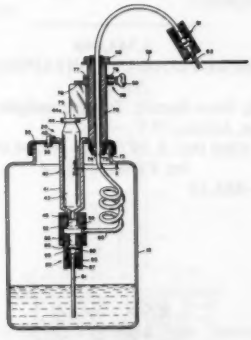
ADJUSTABLE DISPENSING APPARATUS

George G. Goda, 390 First Avenue, New York, N.Y.

Filed June 14, 1971, Ser. No. 152,636

Int. Cl. B67d *5/42*

U.S. Cl. 222—309 **7 Claims**

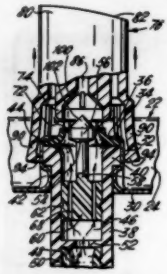


An apparatus for repetitively dispensing predetermined amounts of liquid from a dispensing bottle. An output tube for remote dispensing is provided with a check valve at its end to assure consistent accuracy. In a preferred embodiment, a volume spacer is provided so that the amount to be dispensed can be adjusted without relying on the human eye to effect adjustment.

3,741,445
SAFETY VALVE FOR AEROSOL PACKAGE

Edward H. Green, 11 Army Trail Road, Addison, Ill.

Continuation-in-part of Ser. No. 876,746, Nov. 14, 1969, abandoned. This application Apr. 21, 1971, Ser. No. 135,943
Int. Cl. B65d *83/14*
U.S. Cl. 222—397 19 Claims

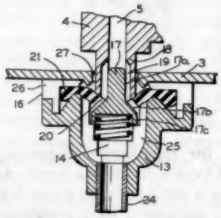


A valve assembly for securement to a container for dispensing pressurized product has a cover member with a central upstanding boss, a perforated diaphragm held in the top of the boss and capable of invagination inwardly of the package and outwardly of the package. A housing depending from the interior of the boss carries an upstanding post providing a valve seat on the outside of the diaphragm, the post extending through the perforation of the diaphragm. Pressure from the interior of the package holds the diaphragm against the valve seat, normally preventing invagination outwardly of the package. An actuator member engages over the boss and has an external metering orifice and connection to a clearance chamber on its interior, the clearance chamber being formed by a skirt engaging the top of the diaphragm and aiding in preventing outward invagination of the diaphragm. The exterior of the actuator member has elongate axially extending fingers with enlarged bottom ends that engage the crimps on the exterior of the boss and are adapted to ride up and down in the crimps. To operate the valve mechanism, pressing down on the actuator member causes the skirt to press the diaphragm downward away from the valve seat, invaginating the same inward, enabling the pressurized product to emerge through the passageways in the actuator member. Releasing of the actuator member causes the internal pressure to reseat the diaphragm on the valve seat. Unusual pressure on the interior of the package will force the diaphragm to invaginate outward of the package into the clearance chamber and forcing the actuator member off the boss to permit the pressurized product wholly to be expelled.

3,741,446
LOW PRESSURE PRODUCT CONTAINER DISPENSING VALVE

Jean Marand, Saint-Benoit, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,695
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.24 12 Claims

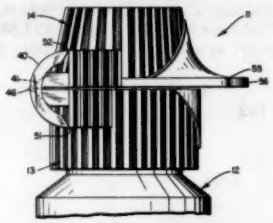


An annular valve body member has a chamber therein and is coupled to the cover of a product container. A solid valve stem moves longitudinally within the chamber and is urged out of the chamber. The upper portion of the stem is fitted to a coupler-aspirator which is in turn coupled to a propellant. A flexible annular gasket is positioned between the valve body member and the product container cover. The inner periphery of the gasket obturates a flow path which extends from the chamber, around the valve stem and into the coupler-aspirator.

3,741,447
CONTAINER CAP

Gilbert DeWayne Miles, Ossining, and Russell Park McGhie, Somers, both of N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 199,859
Int. Cl. B67d *3/00*
U.S. Cl. 222—517 6 Claims



An integral captive cap structure has a closure lid connected to the body by an axially short thick hinge element containing the hinge axis about which the lid is pivoted to closed position over the body, a frictional lock being provided between the closed lid and body. Cooperating parts on the closed structure adapt it to fit a chuck or clutch of a conventional container capping machine.

3,741,448
COLLAPSIBLE WIG STAND

Shirley Kay Friedman, and Morris Friedman, both of Fort Lee, N.J., assignors to Globetrotter Industries, Inc., New York, N.Y.

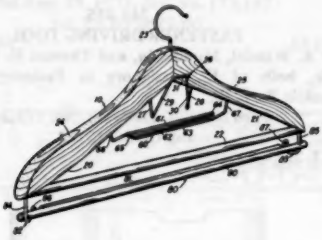
Filed Apr. 1, 1971, Ser. No. 130,126
Int. Cl. D06c *15/00*
U.S. Cl. 223—66 10 Claims

A wig stand in collapsed form consists of flexible, essentially straight ribs joined at both ends to hubs. The ribs and hubs surround a center post fixed in one of the hubs and passing through the other. Forcing the hubs together buckles the ribs outward and locks them into a cage of a form suitable for holding a wig, and simultaneously spreads and locks into spread position three legs for supporting the cage. Means are provided for fastening the stand to a flat surface and for fastening a wig to the wig stand.

3,741,449
GARMENT HANGER

David D. MacKenzie, 15 Peachtree Avenue, N.E., Atlanta, Ga.

Filed Feb. 11, 1972, Ser. No. 225,473
Int. Cl. A47j 51/14
U.S. Cl. 223—91 9 Claims

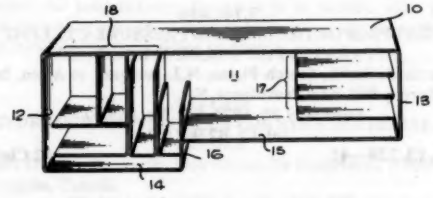


A hanger for use in supporting garments, the hanger being provided with a support frame having two oppositely directed frame elements defining downwardly and outwardly sloping surfaces detailed for supporting the shoulder portions of a garment. Retaining means is attached to an intermediate portion of the hanger frame for engaging a hanging loop of a supported garment to accurately center and maintain the garment on the hanger frame. The hanger includes a plurality of horizontally extending support rods extending between the oppositely directed frame elements at a position below the sloping surfaces for supporting additional garments, such as trousers. One of the horizontally extending rods is pivoted at one end and angularly adjustable between a garment supporting position and a garment on and off loading position. The hanger includes releasable latch means for maintaining the pivotal rod in a garment supporting position. Tie support means is provided on the hanger between the oppositely directed frame elements.

3,741,450
COMPARTMENT ORGANIZER

Wesley D. Seastrom, La Canada, Calif., assignor to Seastrom Manufacturing Co., Inc., Glendale, Calif.

Filed Sept. 17, 1971, Ser. No. 181,451
Int. Cl. B60r 5/02
U.S. Cl. 224—42.42 R 5 Claims

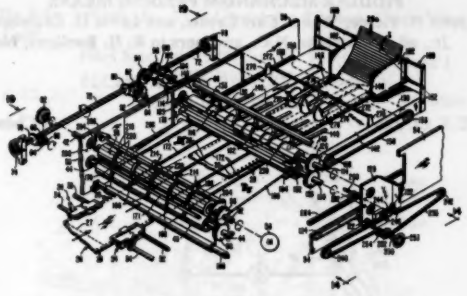


An organizer is disclosed herein for storing a plurality of dissimilar articles in an orderly arrangement which includes a plurality of separate and individual storage elements adapted to be selectively arranged with respect to each other for providing a plurality of open pockets intended as storage space. Each storage element includes a U-shaped cross section having opposite sides connected at one end by an integral section piece. The opposing surfaces of the opposite sides and the section piece define an open-sided and open-ended area for insertably receiving articles to be stored. Pressure sensitive adhesive material is employed to secure selected ones of the plurality of storage elements together in a predetermined manner so that the respective openings will readily accommodate insertion of the articles without interference.

3,741,451
BURSTER APPARATUS

Frank V. Parenti, Dayton, and Robert W. Staneck, Warren County, both of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed Jan. 4, 1971, Ser. No. 103,620
Int. Cl. B26f 3/02
U.S. Cl. 225—100 17 Claims



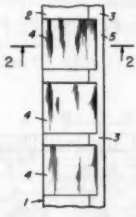
Burster apparatus for separating a continuous strip or web of material into portions, or sheets or the like, the strip customarily having spaced-apart score lines or the like, along which separation occurs. The apparatus has a plurality of spaced-apart pairs of rollers or cylinders. The spaced relationship between pairs of rollers is adjustable. The rate of rotation of one pair of rollers is different from the rate of rotation of a pair of rollers which is adjacent thereto.

One pair of rollers is movable to a position adjacent another pair of rollers for the bursting of a web consisting of short portions. Strip engagement means are movable into and out of web engaging position. The engagement means are of assistance in severance of certain types of webs. Resilient auxiliary contact means are carried by at least one roller member to assist in proper movement of a sheet or the like after separation thereof from a web occurs.

3,741,452
MODIFIED STEEL RULE DIE

William J. Clayton, Fairport; Clair C. Smith, Holcombe, and Earl K. Dewey, Canadaigua, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 849,721, Aug. 13, 1969, abandoned. This application Mar. 29, 1971, Ser. No. 129,232
Int. Cl. B26f 3/02
U.S. Cl. 225—103 1 Claim



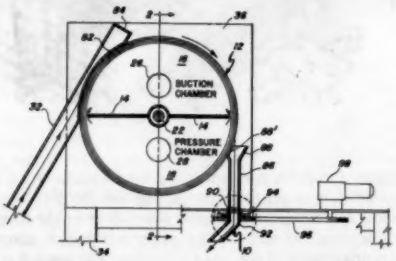
The formation of plastic bodies from thermoplastic sheet using the hot platen technique and trimming in place in the mold, wherein the molded product is removed from the forming press while still attached to the sheet. A sheet having the molded product attached thereto but much more easily removed is formed by using a modified steel rule die. The die is modified by cutting small slots at a plurality of points in the outside edge of the blade so that at the point of slotting, the

cutting edge of the die is narrower than the rest. When the die is pressed into the sheet following the molding step, a long crack forms around the periphery of the product until the point of a slot is reached and a small crack forms along the length of the slot leaving an attachment to the sheet between the long and the small cracks.

3,741,453
PIDDLER MECHANISM FEEDING MEANS

John H. Pierce; Walter Carl Credle, and Lewis O. Crawford, Jr., all of Charlotte, N.C., assignors to R. H. Bouligny, Inc., Charlotte, N.C.

Filed Nov. 12, 1971, Ser. No. 198,310
Int. Cl. B65h 17/28
U.S. Cl. 226—7 **9 Claims**



Means is provided for feeding strand material to a piddler mechanism for coiling delivery of the same into a collection bin. The feeding means employs a rotating drum having a perforate periphery at a portion of which suction is impressed to grip and feed the strand material, while maintaining pressure at a following peripheral portion to free the strand material in a manner that prevents it from lapping on the drum and that materially lessens the tension on the material as it moves forward to and through the piddler mechanism.

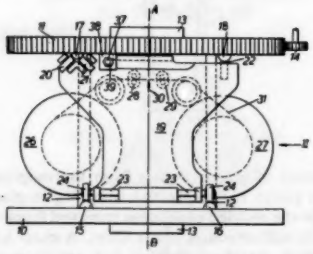
ERRATUM

For Class 226—145 see:
Patent No. 3,741,458

3,741,454
PROJECTION APPARATUS

Ian Graham Thom, Edinburgh, Scotland, assignor to Ferranti Limited, Hollinwood, England

Filed May 17, 1972, Ser. No. 253,932
Claims priority, application Great Britain, May 18, 1971, 15,510/71
Int. Cl. B65h 17/22
U.S. Cl. 226—179 **6 Claims**

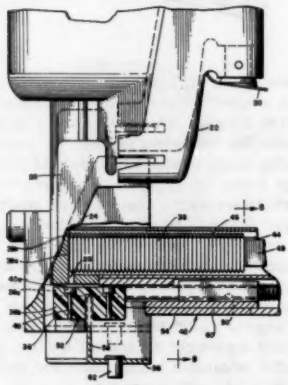


Projection apparatus such as for a moving-map display, has storage means for a length of film and means for moving the film along its length through a projection field. The storage and transport means are mounted on a carriage arranged to move in a transverse direction along at least one guide member. Movement is effected by a motor carried on the carriage and having a capstan drum which engages a taut cable attached to the apparatus parallel to the guide member.

3,741,455
FASTENER DRIVING TOOL

Oscar A. Wandel, Mundelein, and Thomas H. Dorney, Wood Dale, both of Ill., assignors to Fastener Corporation, Franklin Park, Ill.

Filed Nov. 20, 1968, Ser. No. 777,262
Int. Cl. B27f 7/02
U.S. Cl. 227—8 **2 Claims**

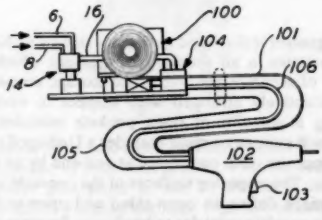


There is provided a fastener driving tool for automatically feeding a component such as a clip and fastening the same in position by driving a fastener therethrough into a workpiece. The tool includes a housing having structure defining a drive track with a fastener driving member movable through the drive track. A magazine assembly is provided having first guide means for supplying clips to the guide track, and having second guide means for supplying fasteners to said guide track whereby operation of the fastener driving member through a drive stroke is effective to drive a fastener through the component and into a workpiece.

3,741,456
GAS PROPORTIONING AND PRESSURE CYCLING APPARATUS FOR WELDING EQUIPMENT

Francis E. Smith, Scotch Plains, N.J., assignor to Airco, Inc., Murray Hill, New Providence, N.J.

Filed May 20, 1971, Ser. No. 145,377
Int. Cl. B23k 1/00
U.S. Cl. 228—41 **12 Claims**

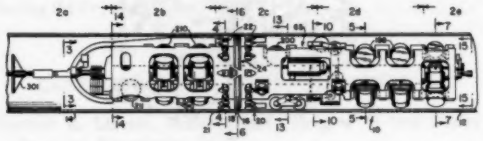


A gas mixing system for mixing a plurality of different gases wherein all the inlet means for the various gases are controlled simultaneously by a bistable pressure responsive device mechanically coupled thereto.

3,741,457
LINEUP CLAMP AND BACKUP DEVICE

Richard B. Gwin, Arlington; William L. Ballis, Hilliard; Claude W. Churchheus, Laurelville; Bruce L. Hutt, Valley View; Charles R. Chew, Chagrin Falls, and Arthur M. Hall, Newton Falls, all of Ohio, assignors to Columbia Gas System Service Corporation, Wilmington, Del.

Filed Aug. 19, 1971, Ser. No. 173,157
Int. Cl. B23k *19/00*
U.S. Cl. 228—44 **55 Claims**

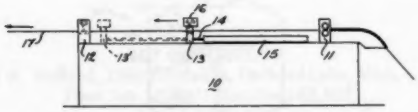


A pipe clamp for aligning and spacing a pair of pipes to be welded is disclosed wherein a housing, having first and second axially aligned housing sections with adjacent end positions positioned relative axial movement, is adapted for disposition within and coaxially of a pair of pipes to be welded, with the adjacent end portions of the housing sections located adjacent the inside of the joint between the adjacent ends of the pipe to be welded. A plurality of clamping chambers are slidably mounted in each of the housing sections for radial movement between extended and retracted positions and are moved between these positions by pneumatic drive means for selective engagement with the inner surface of the surrounding pipes. A pneumatic drive mechanism is operatively connected between the clamping members mounted on the first housing section and the second housing section for moving the first housing section and the clamping members thereon a predetermined distance with respect to the second housing section, after the clamping members are extended so that a pipe clampingly engaged with the clamping members on the first housing section is moved a predetermined distance with respect to a pipe clampingly engaged with the clamping members on the second housing section whereby the adjacent pipe ends are spaced that predetermined distance. The second housing section is also provided with a weld joint backup shoe assembly slidably mounted thereon for radial movement between extended and retracted positions and is located between the clamping members on the first and second housing sections. The backup shoe assembly is extended and retracted by pneumatic drive means into and out of position adjacent the joint between the pipes to be welded, after the pipes have been spaced, to provide backup support for molten weld metal during the welding operation.

3,741,458
HYDRAULIC CONTROLLER FOR STRIP MATERIAL FEEDER

Albert Orser Aylesworth, 3050 Alexander Boulevard, Windsor, Ontario, Canada

Filed Oct. 14, 1971, Ser. No. 189,237
Int. Cl. B65h *17/44*
U.S. Cl. 226—145 **13 Claims**

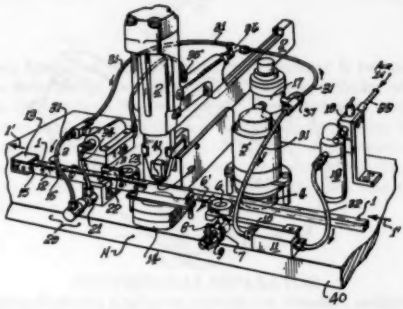


An apparatus is described for intermittently feeding strip material to a punch press or like machine and including a reciprocal carriage member having material grippers provided thereon. The carriage member is reciprocated by way of an air or hydraulic cylinder and the stroke of the carriage cylinder is controlled by means of a counteracting hydraulic plunger cylinder connected to a closed hydraulic system.

3,741,459
MACHINE FOR APPLYING ACCURATELY-SPACED FASTENING ELEMENTS

Ellis John Arkush, Jr., 1144 Gleneagles Terrace, Costa Mesa, Calif.

Filed Sept. 30, 1971, Ser. No. 185,195
Int. Cl. B27f *7/14*
U.S. Cl. 227—3 **7 Claims**

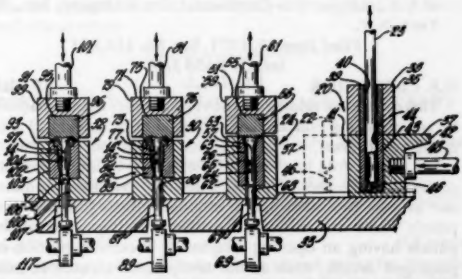


An automatic machine for applying fastening or similar elements such as staples to a workpiece, in a row having accurately predetermined spacings. Cumulative spacing errors are absent. One application is for the insertion of the staples into the tilt rods of shutters. An elongated control element such as a punched steel tape is used to control a pneumatic stapling gun or the like. Holes are punched in the tape at positions corresponding to the locations that the fasteners are to have on the workpiece. One end of the tape is attached to the workpiece and moves with it past the stapling gun. The holes are sensed by a sensitive air pilot valve, which causes the gun to fire when a hole is sensed. The workpiece is moved continuously by a motor and roller. Insertion of a workpiece, such as a wooden rod, starts the machine via a roller-actuated valve. When the workpiece has passed through the machine, this valve releases and stops the machine. The machine is inexpensive, self-contained, and portable. Tapes are easily changed.

3,741,460
APPARATUS FOR PRODUCING A STREAM FEEDER

Leonard A. Matulewicz, Toledo, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 733,040, May 29, 1968, Pat. No. 3,579,807. This application Dec. 7, 1970, Ser. No. 95,860
Int. Cl. B23k *1/20*
U.S. Cl. 228—5 **5 Claims**



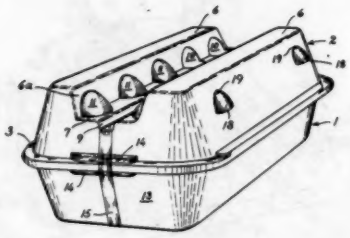
Apparatus and method for forming a feeder for flowing streams of filament forming material such as molten glass by

deforming tubular members into contoured longitudinal members and subsequently securing the longitudinal members to a plate with orifice openings in alignment with such openings.

3,741,461
ARTICLE-REVEALING CARTON FOR FRAGILE OBJECTS

Jens Hassing-Hansen, Bagsvaerd, Denmark, assignor to Aktieselskabet Brodrene Hartmann, Lyngby, Denmark

Filed Feb. 18, 1971, Ser. No. 116,432
Claims priority, application Japan, Feb. 23, 1970, 45/17001
Int. Cl. B65d *1/00, 81/16, 25/54, 85/32*
U.S. Cl. 229—2.5 **5 Claims**



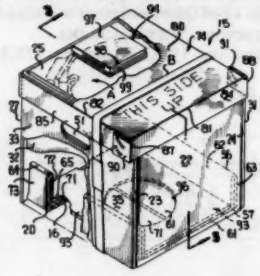
The present invention relates to an article-revealing carton for fragile objects, particularly eggs, consisting of a container section with a cover section hinged thereto, said container section having a plurality of article-receiving compartments arranged in at least two parallel rows and also upwardly extending projections located between said rows of compartments, and said cover section having at least two upwardly projecting gable portions extending parallel with the rows of compartments and a roof portion recessed between two neighboring gable portions and interconnecting the lowermost edges of the opposed sides of the neighboring gable portions, and moreover there is provided a number of apertures corresponding to the compartments in the container section, said apertures being formed in the recessed roof portion and the sides of the gable portions adjoining thereto, and being arranged so as to coincide with the respective compartments in the container section, when the cover section is closed thereon, and that the recessed roof portion has a downwardly projecting web which extends along the entire length of the roof portion and has a trough-shaped cross section and forms an open-end channel, and that the web and the projections are so formed and arranged in relation to each other that the web rests on the tops of the projections, when the cover section of the carton is closed on the container section.

3,741,462
CONTAINER FOR HERMETIC COMPRESSOR

Milford G. Flint, Kirkville, and Paul C. Contegni, Solvay, both of N.Y., assignors to Continental Can Company, Inc., New York, N.Y.

Filed June 25, 1971, Ser. No. 156,871
Int. Cl. B65d *5/18*
U.S. Cl. 229—16 R **19 Claims**

This disclosure relates to a novel container blank adapted to be set up into a container in which is to be packaged a hermetic compressor, the blank including bottom, side, end and cover panels, fold line means for effecting relative movement of the panels to a set-up position defining the closed container, and at least two other panels outboard of the first-mentioned panels which are readily removable therefrom, one of these panels having an opening adapted to receive a portion of a packaged article, such as the compressor heretofore noted, and the other being twice folded to form a cushioning component. The container blank additionally preferably includes a pair of reinforcing panels joined one each to opposite sides of the bottom panel and defining three reinforcing panel portions with two of the terminal panel portions meeting in line contact at approximately the midpoint of the bottom panel with the

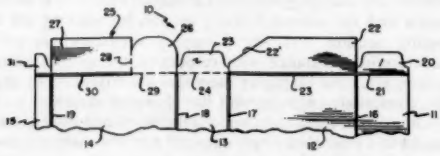


two remaining reinforcing panel portions being in upright relationship at opposite corners of the container whereby these corners and the bottom of the container are adequately reinforced to prevent inadvertent and/or accidental damage during storage or shipment.

3,741,463
EASY OPENING STRUCTURE FOR DRUMHEAD CARTON

Chauncey Young, and William H. Watson, both of St. Louis, Mo., assignors to Rexham Corporation, New York, N.Y.

Filed Jan. 14, 1971, Ser. No. 106,525
Int. Cl. B65d *5/72*
U.S. Cl. 229—17 R **4 Claims**

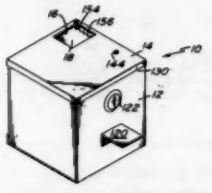


The disclosure herein relates to a tear opening arrangement for end filled, end sealed cartons and, more specifically, to an improved tear opening structure for membrane sealed rectangular parallelpiped cartons of the type in which a separate safety shield material of polyethylene coated glassine polyester film or the like is heat sealed or otherwise tightly sealed to the four end closing flaps of the carton. Simple and improved corner opening is achieved by the provision of a special lift tab and severable dust flap which cooperate through the interposed membrane.

3,741,464
CASH BOX

Henry Verbeke, Chester, N.J., assignor to APL Corporation, Great Neck, N.Y.

Filed July 23, 1971, Ser. No. 165,552
Int. Cl. G07b *15/00*
U.S. Cl. 232—15 **15 Claims**



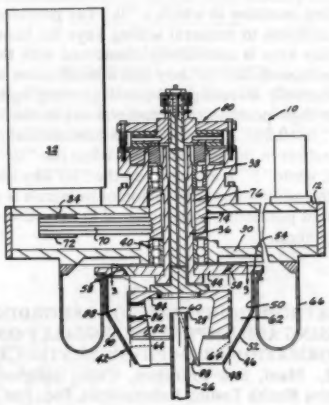
A cash box adapted to be used in vending machines. The box comprises a container having an opening formed in the

top thereof. A plate is slidably mounted in the box adjacent the opening. The plate is releasably retained in a first position, whereby the opening remains open. The plate is also releasably locked in a second position wherein the opening is sealed. The plate is moved to the second position whenever the cash box is removed from the vending machine in which it was placed. The plate can only be moved to its first position when the cash box is unlocked. In this way, the man servicing the vending machine will be able to remove the locked cash box, but will be unable to remove any of the cash contents of the same until the box is unlocked by an authorized person having the key to the cash box.

3,741,465
CENTRIFUGAL SEPARATOR WITH INTERNAL SCRAPER BLADES

Herbert R. Lincoln, Detroit, Mich., assignor to Star Cutter Company, Farmington, Mich.

Filed Jan. 20, 1971, Ser. No. 108,031
Int. Cl. B04b 1/00
U.S. Cl. 233—7 **4 Claims**



Apparatus for removing the solid particles from a liquid in which a bowl of generally inverted cup shape is rotated about a vertical axis concurrently with the supply of a liquid containing solid particles to the inner surface of the bowl so that the solid particles are centrifugally forced against the inner surfce of the bowl and retained thereon. The bowl has fluid outlet openings in its top wall which extend radially outwardly from the axis of rotation of the bowl a distance greater than the spacing of the lower edge of the bowl from the axis of rotation so that fluid with the solid particles removed therefrom will flow out the outlet openings. Blades, positioned within the bowl so that they have scraping edges located adjacent the bowl inner surface, are mounted independently of the bowl for rotation about the same vertical axis on which the bowl is rotated and normally rotate with the bowl. When the blades are braked, the blades scrape the solid particles off the inner surface of the bowl so that the particles can fall out of the bowl through the lower open end.

3,741,466
JET CENTRIFUGE

Carl W. Weiland, 2980 Interlaken, Orchard Lake, Mich.

Filed July 16, 1971, Ser. No. 163,469
Int. Cl. B04b 1/00
U.S. Cl. 233—38 **1 Claim**

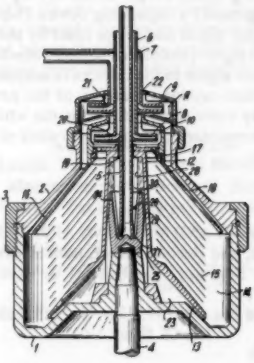
A high speed bowl centrifuge of the type having a rotatably mounted bowl and an independently, rotatably mounted central support member which is enclosed thereby upon which a plurality of disks are coaxially mounted for rotation therewith. The periphery of the disks and the inner surface of the bowl define therebetween a substantially annular space, into which, in the preferred embodiment, at least one pitched extension protrudes from at least one disk. Under normal centrifuging operations, the central support member and bowl are rotated in a common direction at a common rotational speed and thus sludge builds up at the inner surface of said bowl. During the

cleaning operation the central support member is rotated in such a direction as to urge sludge towards said sludge outlet due to the pitch of said extension. The bowl may also be rotated in the opposite direction as to apply a stripping force to the sludge. Furthermore, both of the above-mentioned rotations are at a substantially lower rotational speed than the centrifuging speed so that the extension encounters less compacted sludge.

3,741,467
CENTRIFUGAL SEPARATOR

Ove Allan Valentin Kjellgren, Stockholm, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed July 22, 1970, Ser. No. 57,056
Claims priority, application Sweden, July 24, 1969, 10414/69
Int. Cl. B04b 1/00
U.S. Cl. 233—41 **6 Claims**



In a centrifugal separator having a source of supply of a liquid to be separated, a surface of the separator which contacts the liquid is coated with a poly-alkene which is at least partly fluorinated.

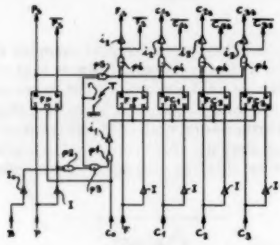
3,741,468
PREPARATION OF PERFORATED JACQUARD CARDS OR PAPERS

Gabriel Servillat, Saint-Cyr-Au-Mont-D Or, France, assignor to Verdol S.A., Lyon (Rhone), France

Filed June 22, 1971, Ser. No. 155,525
Claims priority, application France, July 10, 1970, 7026737
Int. Cl. F27b 9/04
U.S. Cl. 264—65 **6 Claims**

In the preparation of designs on squared paper for the perforation of Jacquard cards or papers, such designs comprising a background (conventionally uncolored) and color zones

each corresponding to a given color, the background is considered as an additional color zone corresponding to a particular color (different from those of the other color zones) and in each color zone (including the background) and in each row the designer only colors the first square which is met during the reading-in operation either at the beginning of the row or when passing from a color zone to the next one, the reader having to consider any uncolored square (white square) as if it were of the same color as the last colored square met in the row. This simplifies considerably the work of the designer and reduces the cost of the design. If the design comprises some few squares or "points" situated within a given color zone (including the background) and corresponding to a particular color (different from all the other colors of the design) they are wholly colored and the color of the said given zone is not



repeated after them, the reader considering the color of such points as having priority to momentarily prevail on the color of the zone which remains, so to speak, in the reader's memory.

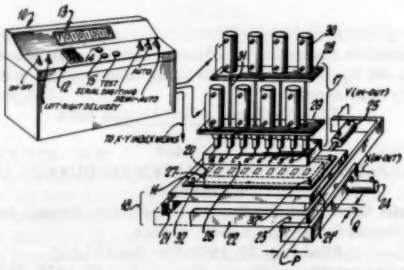
When the design is read-in by photo-electric means emitting color signals and also coincidence signals whenever they are centered on a square, there is inserted between these means and the perforating means a logic circuit having for each color (including background) a registering device (filp-flop) conditioned by the color signal and set or reset by the coincidence signal. The white signal (uncolored square) blocks the passage of the coincidence signal to the devices (excepting that of the priority color) thus causing repetition of the previous color. As to the priority color signal, it acts as the white signal and furthermore it momentarily inhibits the outlets of the other registering devices.

3,741,469

ENCODING AND MARKING APPARATUS

John A. Castaldi, and Herbert Goetz, both of Brooklyn, N.Y., assignors to Supreme Equipment & Systems Corp., Brooklyn, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,248
Int. Cl. G06k *1/02*
U.S. Cl. 234—90 **19 Claims**



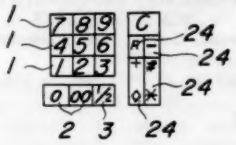
The invention contemplates digit-marking apparatus for characterizing a read-out surface with *n*-digit binary data for each of *m* decimal digits, wherein *m* digit-marking elements are employed in a cycle of *n* indexed displacements of the marking elements and read-out surface with respect to each other. The invention is described in connection with card-punching of binary-coded data, using a four-station two-dimensional index pattern, thus establishing for each of the several decimal digits a four-bit binary-code punch pattern.

3,741,470

ADDING MACHINE

Ryoichiro Koshi, Mitaka, Japan; Gian Piero Barozzi, and Giancarlo Horeschi, both of Rossi, Italy, assignors to Citizen Watch Co., Ltd., Shinjuku-ku, Tokyo, Japan

Filed Dec. 28, 1970, Ser. No. 101,967
Claims priority, application Japan, July 6, 1970, 45/58896
Int. Cl. G06c *29/00*
U.S. Cl. 235—60 TK **1 Claim**



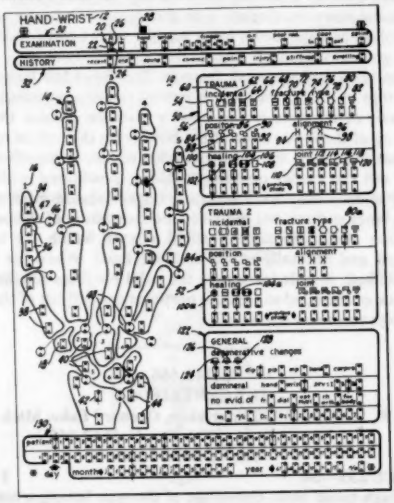
An adding machine in which a "½" key provided on a key board in addition to numeral setting keys for numeral 0 – 9 and function keys is operatively connected with the numeral setting mechanism for "5" key and a mechanism is provided for automatically selecting a 0-pin depending upon whether the lowest digit position of a numeral set in the machine is "0.0" or "½ (0.5)," whereby "0" is automatically added to the numeral set in the machine only when the "½" key is not depressed, while "5" is added when the "½" key is depressed, and thus the addition or subtraction of numerals is performed with the digit positions of one numeral in accord with those of another numeral.

3,741,471

METHOD AND SYSTEM FOR RECORDING, PROCESSING AND DISPLAYING VISUALLY OBSERVED INFORMATION FROM PHYSICAL STRUCTURE

Richard L. Mani, San Francisco, Calif., assignor to Comprehensive Health Testing Laboratories, Inc., San Francisco, Calif.

Filed Dec. 9, 1971, Ser. No. 206,488
Int. Cl. G06k *19/00*
U.S. Cl. 235—61.9 R **14 Claims**



A method and system for recording visually observed information of a physical structure and producing graphic displays

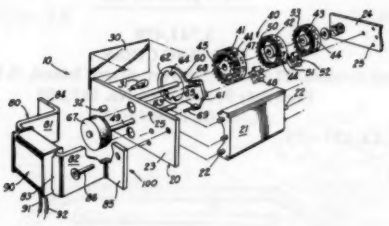
of the information in accordance with a predetermined program. The system includes a record sheet provided with a graphic illustration of a typical anatomical structure together with indicia receiving sites on the sheet with certain of the sites being superimposed on selected portions of the anatomical structure and arranged in a pattern which, when read by mark sense reading means, provides an input into data processing equipment programed to generate a print-out of diagnostic descriptions of the anatomical structure. The program is arranged to generate diagnostic descriptions which progress from generalized statements to more specific descriptions and nuances of the diagnosis in accordance with the order in which the sites are marked. In one embodiment certain of the sites are arranged in a first group adjacent to or superimposed over a portion of the anatomical illustration for which information is to be described, with additional sites being provided on the sheet adjacent the illustration for recording specific description and nuances of pathology for one or more sites marked in the first group. Additional sites are provided on the sheet for recording generalized information regarding the observed pathology and patient access information and the like. Certain of the sites are provided adjacent printed pattern recognition symbols generally descriptive of the information to be recorded by marking such site.

3,741,472

ELECTRICAL COUNTER

Clarence E. Pittman, Atlanta, and Ivan H. Crim, Chamblee, both of Ga., assignors to Lectra Data, Inc., Atlanta, Ga.

Filed Jan. 24, 1972, Ser. No. 220,018
Int. Cl. G06m *1/04*
U.S. Cl. 235—92 C **5 Claims**



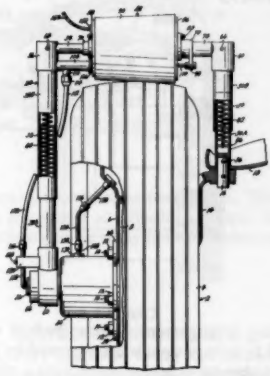
A counter capable of serially receiving and accumulating a plurality of input values. The counter includes an ordinal series of register wheels having carry means operable for effecting a transfer of a value representative of an input value of one from a lower order register wheel into a next adjacent higher order register wheel in response to advancement of said lower order register wheel past a predetermined point. Input means is operatively associated with the ordinal series of register wheels and operable for effecting an increment of advancement of the lower order register wheel a predetermined amount representative of an input value of one in response to a cycle of operation of the input means. The input means includes a permanent magnet which is normally biased in a first predetermined direction by a magnetic attraction means. Electromagnetic means is operatively associated with the magnetic attraction means for reversing the polarity of the magnetic attraction means whereby the permanent magnet will be biased in a second predetermined direction in response to an electrical pulse being applied to said electromagnetic means. The permanent magnet will thereafter be automatically biased in the first predetermined direction in response to the completion of the electrical pulse being applied to the electromagnetic means. Thus an electrical pulse applied to the electromagnetic means will effect oscillating movement of the permanent magnet to thereby effect corresponding oscillating movement of the input means to effect an increment of advancement of the lower order register wheel a predetermined amount representative of an input value of one.

3,741,473

ODOMETER

Carl E. Finley, 401 E. Fourth Street, Lamar, Mo.

Filed Dec. 8, 1971, Ser. No. 205,968
Int. Cl. G01c *22/00*
U.S. Cl. 235—95 R **9 Claims**



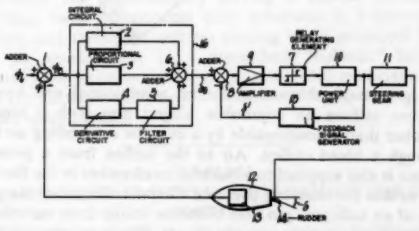
An odometer consisting of a frame attachable to a steerable, unpowered automobile wheel so as to be movable but not rotatable therewith, a roller carried by the frame on an axis parallel to the wheel axis and urged resiliently against the periphery of the tire of the wheel so as to be rotated when the wheel turns, and mechanism operable to count and indicate revolutions of the roller. The roller may be conical coaxially with its axis, and mechanism may be provided for moving the roller parallel to its axis, responsively to changes of air pressure in the tire, whereby to compensate for differences of tire diameter, and hence the distance travelled for each rotation thereof, resulting from different tire pressures.

3,741,474

AUTOPILOT SYSTEM

Shin-Ichi Kawada, Yokohama; Yoichi Hirokawa, Kamakura, and Isao Masuzawa, Tokyo, all of Japan, assignors to Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.), Tokyo, Japan

Filed Feb. 18, 1971, Ser. No. 116,516
Claims priority, application Japan, Feb. 24, 1970, 45/65668
Int. Cl. G05b *11/42*
U.S. Cl. 235—150.1 **5 Claims**



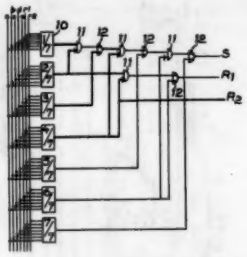
A marine autopilot system in which derivative, proportional, filtering and integral functions are performed including a device for changing the time constant of an integrator and either or both of the time constants for the differentiator and the filters such that the automatic steering loop remains so as to control a ship safely.

3,741,475

SUMMING ARRANGEMENTS

Pierre Hardy; Leon Hardy, both of Paris, and Simeon Lekarski, Saint-Cloud, all of France, assignors to Jean Gachot, Enghlien-les-Bains, France, a part interest

Filed Aug. 4, 1971, Ser. No. 168,905
Claims priority, application France, Aug. 5, 1970, 7028920
Int. Cl. G06f *7/385*; G06d *1/04*; F15c *4/00*
U.S. Cl. 235—175 10 Claims



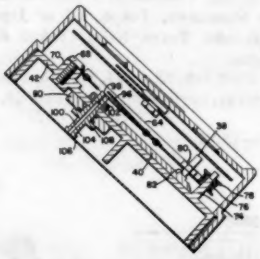
A summing arrangement is described in which numbers represented by binary signals are summed by using threshold devices. The threshold devices each have a plurality of inputs which are connected to receive the input signals. Since all the threshold devices have different threshold criteria, the number of threshold devices energised will vary in accordance with the number of signals present at the inputs and thus provide an indication of the sum of the signals received. Logic circuits are then used to convert this information into a binary output. The threshold devices can comprise fluidically operated devices.

3,741,476

PNEUMATIC THERMOSTAT

Dalny Travaglio, Kensington, Calif., assignor to Universal Pneumatic Controls, Inc., Belmont, Calif.

Filed Jan. 13, 1972, Ser. No. 217,570
Int. Cl. F24f *7/06*
U.S. Cl. 236—87 14 Claims



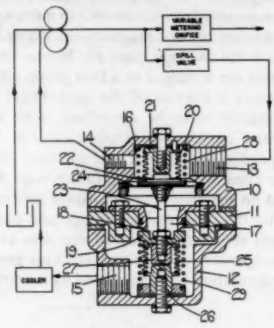
A pneumatic thermostat for air conditioning and heating systems utilizes an adjustable hinged arm with a bimetal member that is positionable by a cam for controlling air flow through a bleed orifice. Air to the orifice from a pressure source is also supplied to a calibration chamber in the thermostat so that the resulting pressure therein will control the position of an indicator pin that becomes visible from outside the thermostat at certain pressure levels. Means are provided for adjusting the position of the hinged arm without opening the thermostat so as to control the amount of air flow through the bleed orifice and hence the pressure in the calibration chamber. Proper calibration is attained by setting the cam relative to a known temperature level and adjusting the arm position by visual reference to the position of the indicator pin.

3,741,477

TEMPERATURE SENSITIVE FLOW-DIVIDING VALVE

Brian Edmund Sparks, Warwick, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 16, 1971, Ser. No. 153,646
Claims priority, application Great Britain, June 16, 1970, 29,107/70
Int. Cl. G05d *23/12*
U.S. Cl. 236—93 9 Claims



A temperature sensitive flow-dividing valve has an inlet and first and second outlet. A closure member between the inlet and the second outlet is movable by a bellows within which is a temperature-sensitive fluid. This bellows is also responsive to a rise in pressure at the inlet to close the valve. A further bellows is responsive to a rise in pressure at the second outlet to move the closure member to open the valve.

3,741,478

HEATING COILS

Frank Summa, 22 Starbuck Street, Staten Island, N.Y.

Filed July 9, 1971, Ser. No. 161,201
Int. Cl. F28f *13/18*
U.S. Cl. 237—73 1 Claim

A heat exchanger for providing radiant heat, the device comprising a circular reflector which is inwardly dished on one side so to form a concave reflective surface of parabolic character, three circular heater coils of each a different size being positioned concentrically in front of the parabolic reflector, all of the heater coils being connected to a steam source by means of a hand operated controll valve, and the diametrically opposite side of the heating coil being connected to a steam outlet valve.

3,741,479

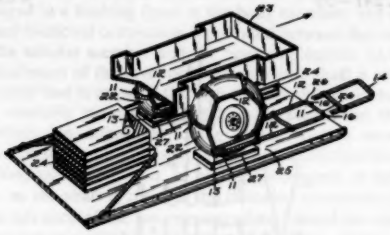
DRIVE-OFF AID FOR WHEELED VEHICLES AND METHOD

Predrag Shopalovich, Ashland, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 4, 1971, Ser. No. 186,339
Int. Cl. E01b *23/00*
U.S. Cl. 238—14 4 Claims

A drive-off aid for removing a self-propelled wheeled vehicle under its own power from a position on an airdrop plat-

form when shock absorbing material arranged between the vehicle and the platform prevents the tractive wheels of the vehicle from developing sufficient traction in contact with the platform surface to permit the vehicle to be driven off the platform, and the method for using same. The drive-off aid comprises a flexible ladder-like member having one end adapted

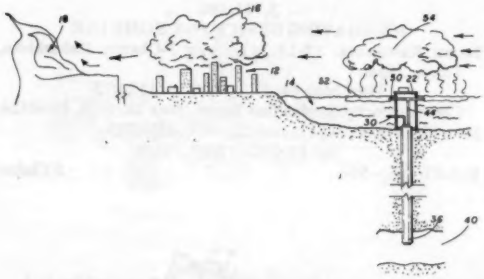


for attachment to the end of the platform and the other end adapted for tractive engagement with the periphery of a tractive wheel of the vehicle in such a manner that rotation of the tractive wheel causes the ladder-like member to be wound upon the periphery thereof to thereby pull the vehicle off the shock absorbing matter by its own power.

3,741,480
SMOG AND WEATHER CONTROL SYSTEM

Allen T. Van Huisen, 2267 Clover Drive N.W., Grand Rapids, Mich.

Filed July 2, 1970, Ser. No. 51,835
Int. Cl. A01g *15/00*
U.S. Cl. 239—2 R **7 Claims**



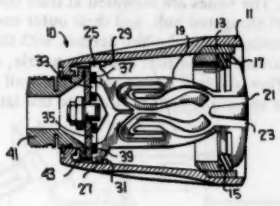
An air cleansing system for cities and other geographically located areas in which geothermal wells supply heat to a top surface of a body of water upwind from the geographical area, creating a moist high pressure area over the water. The high pressure area, moved by the wind will precipitate the smog particles from the air.

3,741,481
SHOWER SPRAY

Peter Bauer, Germantown, Md., assignor to Bowles Fluidics Corporation, Silver Springs, Md.

Filed July 19, 1971, Ser. No. 163,566
Int. Cl. B05b *3/14*
U.S. Cl. 239—102 **25 Claims**

A shower spray element includes a plurality of three-sided channels, the fourth side remaining open to atmosphere. Water is issued through each channel in the form of a jet which experiences "Coanda" attachment to one side of the channel. By selecting different angular orientations of the attachment side in the various channels, the issuing jets can be angled to provide even spray coverage with a minimum number of channels. In a modified embodiment a fourth side is provided for each channel to form a fluidic switching element wherein the jet issuing from each channel may be directed along either of two angularly displaced paths or, alternately

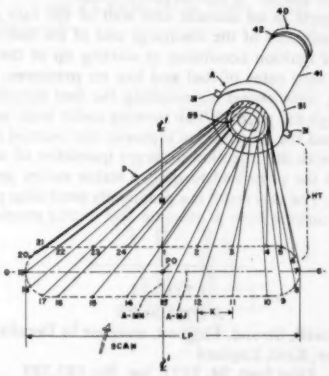


may fill a channel encompassing both paths. The switching element may be connected as a fluidic oscillator whereby the overall spray pattern produced by the spray element is caused to oscillate.

3,741,482
DISTRIBUTION DEVICE

Kay E. Eliason, Fort Madison, Iowa, and James R. James, Louisville, Ky., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Sept. 17, 1971, Ser. No. 181,440
Int. Cl. B05b *7/10*
U.S. Cl. 239—296 **11 Claims**



An improved foam spray nozzle adapted, in a principal embodiment, for pneumatically driving a viscous stream of urethane foam constituents onto substrates in a controlled pattern and thickness uniform coating being projected by a gas jet arrangement in a prescribed "ballistic" fashion whereby the jet ports surround an open-ended material outlet and are disposed and tilted in a patter reflecting the contemplated spray pattern.

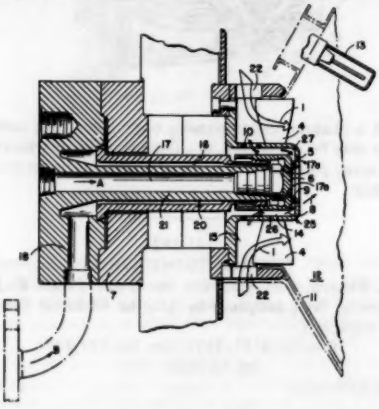
3,741,483
COMBUSTION AIR SUPPLY ARRANGEMENT FOR GAS TURBINES

Katsuyuki Kawaguchi, Akashi, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1971, Ser. No. 206,621
Int. Cl. B05b *7/10*
U.S. Cl. 239—400 **5 Claims**

The combustion chamber of a gas turbine has a mixture of air and fuel sprayed thereinto through an injection nozzle including a central passage for the fuel and annular passage and

port means for air under pressure to spray the fuel into the combustion chamber in the form of a spray cone. Additional air is directed into the combustion chamber through a relatively large annular flow passage surrounding the fuel injection nozzle, and a whirler, in the form of a set of radial vanes disposed at a small angle to the direction of flow, is interposed in this channel. The vanes are mounted at their inner ends on an enlarged and elongated hub, and their outer ends are free. The circumferential wall of the hub defines, with the outer circumferential surface of the fuel injection nozzle, a relatively small annular flow passage. Openings in the wall of the hub upstream of the vanes allow air to flow into this latter annular



passage and the air is discharged through a series of small diameter ports in an annular end wall of the hub arranged slightly in advance of the discharge end of the fuel injection nozzle. The ignition conditions at starting up of the turbine, under low flow rates of fuel and low air pressures, result in their being little excess air reaching the fuel injection spray cone through the pores. When running under load, as the fuel flow rate and the air pressure increase, the amount of smoke decreases with the injection of larger quantities of additional air through the ports and forming a stable vortex around the spray cone. The end result is a practically smokeless operation of the gas turbine both at start-up and during running under load.

3,741,484

ATOMISERS

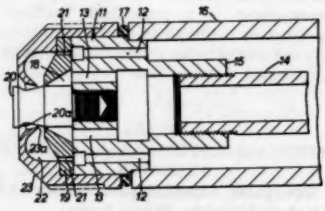
Alan Cresswell, Strood, England, assignor to Decafix Limited, Rochester, Kent, England

Filed Sept. 24, 1971, Ser. No. 183,585

Claims priority, application Great Britain, Sept. 30, 1970, 46400/70

Int. Cl. B05b 7/06

U.S. Cl. 239—424 **8 Claims**



Method and apparatus for atomising liquids in which a liquid is fed from an outer, annular, convergent nozzle into a stream of gas fed at sonic velocity from a coaxial inner convergent nozzle. A difergent deflector is positioned coaxially within the outlet openings of the two nozzles.

3,741,485

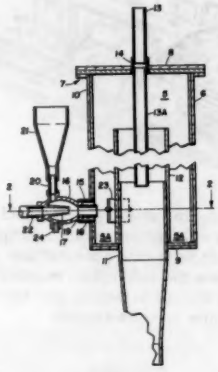
FLUID ENERGY GRINDER FOR INCREASING BULK DENSITY OF MATERIALS

Wayne T. Gage, Niagara Falls, and Leo W. Karski, Lewiston, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed June 3, 1971, Ser. No. 149,429

Int. Cl. B02c 19/06

U.S. Cl. 241—39 **4 Claims**



A grinder for increasing the bulk density of finely divided materials, using an energetic stream of driving fluid to act upon the particulate materials within a suitable grinding chamber. Partcle sizes are reduced sufficiently by impact grinding to give a product of increased bulk density. The grinder is especially effective for the size reduction of hard abrasive materials.

3,741,486

ICE SHAVING DEVICE FOR HOME USE

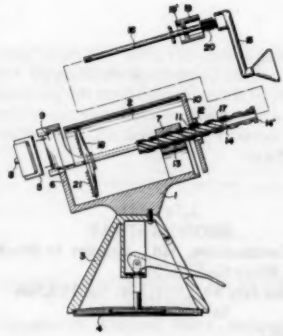
Isamu Kawamata, 18-14, Akatsuka 5-Chome, Itabashi-ku, Tokyo, Japan

Filed June 14, 1971, Ser. No. 152,873

Claims priority, application Japan, June 18, 1970, 45/60524; June 18, 1970, 45/60525; June 22, 1970, 45/62063

Int. Cl. B02c 19/00, 19/20

U.S. Cl. 241—95 **5 Claims**



A body member, which is semi-cylindrical over most of its length, has a cylindrical inner end wall portion formed with an opening into which there projects an ice shaver blade mounted in a block which is adjustably secured to the body member by a screw of the like. The opposite or outer end of

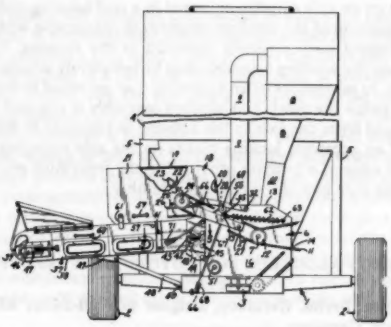
the body member is open. A semi-cylindrical cover member has its lower edges guided in grooves in the upper edges of the semi-cylindrical portion of the body member for sliding relative to the body member and has a cylindrical outer end wall arranged to close the open end of the body member. A rotatably mounted shaft has an ice gripping plate secured to its inner end and an operating handle secured to its outer end. In one embodiment of the invention, this shaft extends through an externally threaded tubular member which is threadedly engaged in a bushing fixed in the body member, and a spring biased frictional connection is provided between the outer end of the tubular member and the operating handle. In another embodiment of the invention, the rotatable shaft is externally threaded and is engaged through an internally threaded bushing rotatably mounted in the bushing support in the body member. An adjustably spring biased friction member is mounted in the bushing support for adjustably restraining the bushing against rotation. In both embodiments of the invention, as the shaft is rotated, the threaded interconnection effects advance of the ice gripping plate toward the ice shaver in accordance with the reduction, by shaving, of the quantity of ice between the gripping plate and the ice shaver.

3,741,487

MEANS FOR MOUNTING AUXILIARY APPARATUS ON A PORTABLE FEED MILL

Glenn G. Kanengieter, Prairie, Minn., assignor to Owatonna Manufacturing Company, Inc., Owatonna, Minn.

Filed Oct. 28, 1971, Ser. No. 193,315
Int. Cl. B02c *12/02*
U.S. Cl. 241—223 **11 Claims**



A shredder attachment and an infeed conveyor attachment each mounted on a portable feed mill and mixer for delivering material to the inlet portion of a hammer mill and, selectively, to shred or otherwise reduce the conveyed material prior to entry thereof into the mill. Both attachments are moveable between lowered operative positions relative to the feed mill and mixer, and raised storage positions thereon.

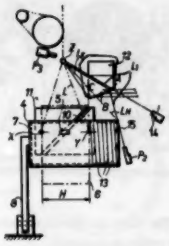
3,741,488

APPARATUS AND METHOD OF PRODUCING YARN RESERVES ON BOBBIN-RECEIVING MEMBERS

Olivier Wuest, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Continuation of Ser. No. 744,864, July 15, 1968, abandoned. This application Aug. 11, 1970, Ser. No. 63,017
Claims priority, application Switzerland, July 19, 1967, 10300/67
Int. Cl. B65h *54/34*
U.S. Cl. 242—18 PW **21 Claims**

A cam having a yarn guide surface is mounted above the sleeve on which the yarn is to be wound. The cam projects into the yarn path to deflect the yarn away from the yarn guide for winding of the yarn into a bobbin. After engaging the end of



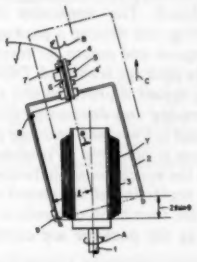
the sleeve, the speed of the yarn towards the yarn guide is braked by the cam so that a large yarn reserve can be built up on the sleeve prior to winding of the bobbin.

3,741,489

BOBBIN WINDER, METHOD AND YARN PACKAGE PRODUCED THEREBY

Sadao Kawamura, Kyoto, and Hideo Matsuno, Osaka, both of Japan, assignors to Toray Engineering Co., Ltd., Osaka, Japan

Filed Mar. 18, 1971, Ser. No. 125,780
Int. Cl. B65h *54/04, 55/04, 57/00*
U.S. Cl. 242—18 **9 Claims**



In an apparatus for winding yarn on a bobbin, the yarn is distributed by a flyer which rotates about an axis that is disposed at an angle to the bobbin axis. The bobbin is rotated in a direction opposite to the direction of rotation of the flyer. The flyer moves axially relatively to the bobbin in a single direction throughout the winding period. The resulting package contains yarn that runs continuously in and out between the inner periphery and the outer periphery of the yarn package enhancing subsequent package dyeing operations.

3,741,490

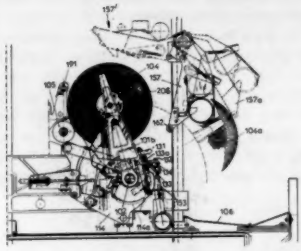
YARN PACKAGE DOFFING APPARATUS AND METHOD

Jean V. Venot, Villerest, France, assignor to Jonathan Logan, New York, N.Y.

Filed Nov. 16, 1971, Ser. No. 199,291
Int. Cl. B65h *54.02*
U.S. Cl. 242—18 A **23 Claims**

An improved method and apparatus for doffing wound packages of strand materials and donning empty cores for re-

sumption of winding, in which the mounting of an empty core onto a core supporting arm is particularly facilitated by slow-



ing movement of the arm as the arm returns to a winding position and an empty core is donned.

3,741,491

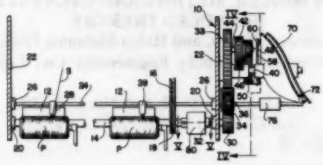
APPARATUS FOR WINDING YARN

Hans Heinrich Richter, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Nov. 29, 1971, Ser. No. 202,784

Int. Cl. B65h *54/38*

U.S. Cl. 242—18.1 **6 Claims**



Apparatus for winding an advancing strand of yarn into a package is disclosed. The apparatus includes means for rotatably supporting and driving a package at a substantially constant rate of speed and means for traversing a strand onto the package as the package is rotated. Drive means for operating the traversing means is provided and regulating means for periodically increasing and decreasing the speed of the drive means as the strand is traversed onto the package is included. The control means is operable in response to the regulating means to disrupt the synchronism between the rotation of the package and the traversing of the strand onto the package to thereby prevent the formation of bands or "ribbons" wherein the strand coils in the package are crowded together or "-piled."

3,741,492

APPARATUS FOR WINDING SEWING THREAD UPON BOBBINS

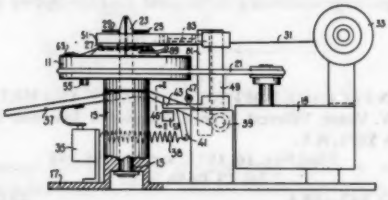
Erik Lennart Johansson, Hertig Karls alle 71, 703 40 Orebro, Sweden

Filed June 15, 1971, Ser. No. 153,288

Claims priority, application Sweden, June 16, 1970, 8331/70

Int. Cl. B65h *54/00, 63/08*

U.S. Cl. 242—20 **7 Claims**



An apparatus for winding sewing thread upon a bobbin is provided with means for holding the thread end when starting the winding and until the thread is securely anchored on the bobbin. Said means comprises a spring clip fastened to the rotor turning the bobbin and located thereon at a greater radius than the bobbin. The thread end part stretched between the bobbin and said holding means can be caught by a stationary member movable into the path described by said thread end, whereby the thread end is disengaged from the holding means and can be covered by the following thread turns upon the bobbin.

3,741,493

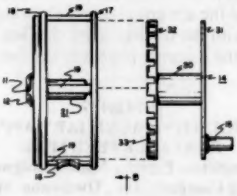
FISHING REEL

Cyril W. Jones, 3100 Warm Springs Avenue, Boise, Idaho

Filed May 13, 1971, Ser. No. 142,987

Int. Cl. A01k *89/02*

U.S. Cl. 242—84.1 R **5 Claims**



The fishing reel of the invention includes a line crank winding assembly having a ratchet about the outermost periphery of the assembly. The line winding assembly is journaled for rotation on an axle suitably mounted in a reel housing and the ratchet portion of the winding assembly is engageable with a a spring loaded pawl pivotally mounted in the housing. Drag tension on the winding assembly may be selectively adjusted in response to movement of an eccentric disc provided to urge a spring against the pawl. The winding assembly is engaged and disengaged from the axle in the housing in response to movement of an eccentric locking means on the axle engaging the terminal edge of a bushing provided in the innermost portion of the line core hub of the winding assembly.

3,741,494

ENERGY ABSORBER FOR AUTOMOBILE SAFETY BELTS

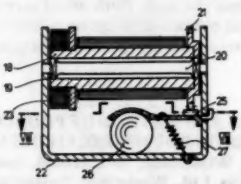
Ernst Fiala, Berlin, Germany, assignor to Wolf-Dieter Klink, Lindach, Germany

Filed May 26, 1971, Ser. No. 146,887

Claims priority, application Germany, May 29, 1970, P 20 26 277.5

Int. Cl. A62b *35/00*

U.S. Cl. 242—107.4 **14 Claims**



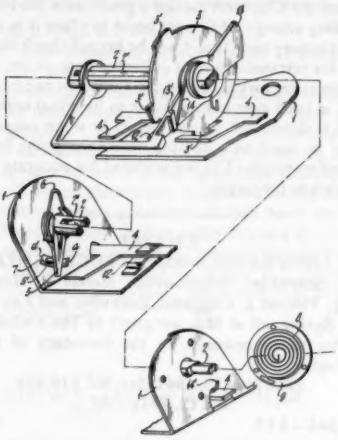
An energy absorber for automobile safety belts which comprises a mounting rigidly or non-rigidly coupled to the chassis, a take-up member which is rotatable relative to the mounting and a torsion bar located between the mounting and the take-up member such that when an impact force is sensed, the torsion bar absorbs the energy of the impact force.

3,741,495

AUTOMATIC LOCKING RETRACTOR SYSTEM WITH STOPPER DEVICE

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed June 16, 1971, Ser. No. 153,784
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 6 Claims



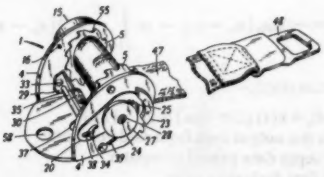
A safety belt retractor mechanism in which the belt may be locked in any selected position against withdrawal and retraction includes a reel upon which the belt is wound and which is spring biased in a belt retraction direction. A coaxial toothed wheel rotates with the reel and a rockable locking member is spring biased into locking engagement with a tooth. A first control member is rotatably mounted on the reel shaft and is spring biased to urge the locking member to a wheel tooth disengage position and responds to a pull on the belt to release the locking member to a tooth engage position. A second control member is engaged by the reel shaft through a slipping clutch to swing in the direction of rotation of the shaft to retain the locking member in a disengaged position with the belt withdrawal rotation of the reel and to release the locking member with the belt retraction rotation of the reel.

3,741,496

SAFETY SEAT BELT RETRACTOR

Herbert R. Beller, Mount Clemens, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed July 13, 1971, Ser. No. 162,073
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 17 Claims



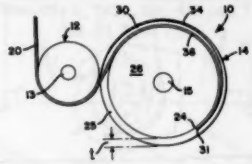
A reel-type retractor for a safety belt incorporating an improved automatic locking device. The retractor is designed so that a driving member rotating in accordance with the reel, cooperates with a driven member to actuate a locking device, thus preventing further extension of the belt when the acceleration of the reel exceeds a preselected rate.

3,741,497

TAKE-UP HUB AND TAPE COMBINATION FOR TAPE TRANSPORT

Kingston E. Ganske, Rough and Ready, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Jan. 25, 1972, Ser. No. 220,628
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—192 7 Claims



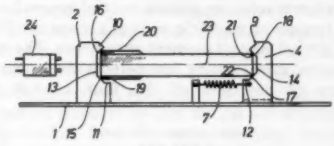
A take-up hub is biased against a rotatable capstan and has a beveled peripheral surface for receiving magnetic tape from a supply. The tape has a tapered end portion of a length equal to the mean circumference of the hub and the taper is formed so the first layer on the hub forms an underlayer which permits subsequent layers to be wound thereon without a bumping action.

3,741,498

APPARATUS FOR RECEPTION OF A CASSETTE WITH A RECORDING CARRIER MATERIAL

Richard Siegemund, Saint Georgen, Black Forest, Germany, assignor to Firma Dual Gerbruder Steidinger, Georgen/Schwarzwald, Germany

Filed Dec. 29, 1971, Ser. No. 213,279
Claims priority, application Germany, Jan. 2, 1971, P 21 00 092.0
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—199 2 Claims



An apparatus for receiving a cassette containing a band-like recording carrier capable of being rewound in a reproduction device, which comprises a cassette, and a band constituting a recording carrier. Holding means are provided for the cassette disposed on opposite sides of the latter and adjustable in a direction towards each other. The sensing plane of the band is disposed within the range of one side of the cassette arranged substantially perpendicularly to the adjustment direction of the holding means. The holding means engaging the sensing side of the cassette have a symmetrical, substantially V-shaped recess, the latter being formed such, that the center of the cassette in relation to the thickness of the cassette upon impression of the cassette into the V-shaped recess assumes coincidence with the plane of symmetry of the V-shaped recess.

3,741,499

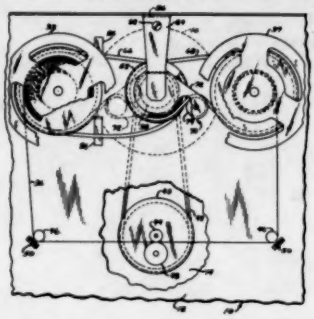
CLUTCH ARRANGEMENT FOR TAPE TRANSPORT

Lloyd Osborn, Fort Wayne, Ind., assignor to V-M Corporation, Benton Harbor, Mich.

Filed Sept. 20, 1971, Ser. No. 182,071
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—201 14 Claims

A clutch arrangement for use with belt driven tape supply and take-up reels wherein the clutch is effective to provide a

controlled drive torque on the take-up reel and no torque on the supply reel over a wide range of speed ratios between the



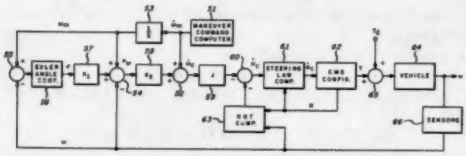
reels and a reel drive pulley. The clutch is operative to provide a substantially constant drive torque during bi-directional rotation of the reels.

3,741,500

CMG FINE ATTITUDE CONTROL SYSTEM

Sam P. Liden, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 21, 1971, Ser. No. 136,088
Int. Cl. B64g 1/00
U.S. Cl. 244—1 SA **3 Claims**



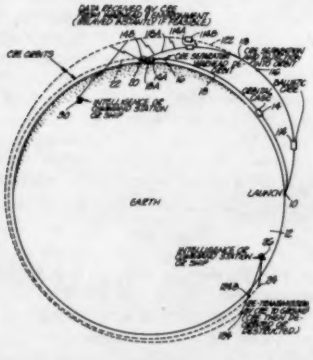
The invention teaches an attitude control system for providing control torques on a vehicle, such as a space satellite, using four single gimbal control moment gyroscopes. The relatively simple constant-gain steering law permits three axis control after failure of any one of the four control moment gyroscopes.

3,741,501

SELF MONITORING STRIKE SYSTEM

Robert J. Salkeld, 410½ Landfair Avenue, Los Angeles, Calif.

Filed May 6, 1968, Ser. No. 727,106
Int. Cl. F41g 7/16
U.S. Cl. 244—3.14 **3 Claims**



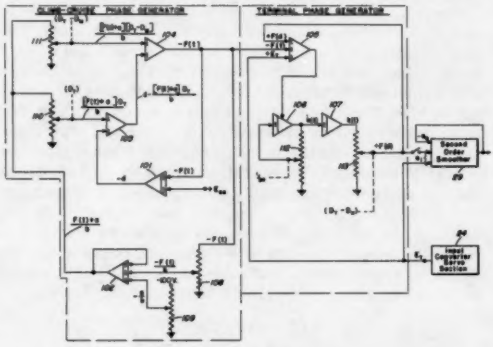
A missile includes a detachable data collection and return element (CRE) which separates from the missile at an appropriate point in its trajectory at, for example, the apogee, continues to collect data with respect to the environment and the missile itself (including confirmation of its own burst and also bursts of other missiles in its salvo). Such CRE unit either relays instantly or stores and relays back upon command when its trajectory brings it within range of an intelligence collecting or command station which may be located at a great or safe distance from the scene of destruction. When the missile trajectory is ballistic (for example in a typical ICBM or IRBM case) then the CRE unit carries a propulsion module capable of providing enough additional boost to place it in an orbit or longer trajectory such that it will be brought back into suitable position for retransmission of collected data. In the case when the missile trajectory is orbital the CRE unit needs no propulsion and in such case continues on in its initial orbit after the warhead is deboosted to the target. In some cases the CRE unit may be used as a moving reference point from which signals are transmitted to the warhead for accurate control of a flight path to the target.

3,741,502

LONG RANGE MISSILE PROGRAMMER

Irvin H. Schroader, Simpsonville; Melvin E. Hosea, Silver Spring; Vincent J. Caggiano, Rockville, and Leo C. Miller, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 15, 1961, Ser. No. 110,615
Int. Cl. F41g 7/00
U.S. Cl. 244—3.13 **10 Claims**



In an apparatus for controlling the flight trajectory of a guided missile, second order programming computer and smoother means for manipulating input perameters in accordance with the relations

$$e_o = \int_{t=G}^{t=P} e_o dt,$$

$$\dot{e}_o = -2\omega_n(e_o - e_i) - \sigma \int_{t=G}^{t=P} \omega_n^2 (e_o - e_i)dt$$

$$+ \text{constant},$$

and $e_i = = E_t + k(t)\,[Dr - Dm] = E_t + F(d)$

where e_o is the output data from said computer,

e_i is the input data to said computer,

$\dot{e}_o$ is the first derivative of e_o,

ωn is the gain sensitivity factor of the computer,

E_T is the elevation of the target,

σ is a constant,

P is the present time,

C is the time of guidance initiation,

$k(t)$ is a time varying programming factor and $F(d)$ is the output of an input driving function generator, a first input

source of voltage for said second order programming computer means relating to E_T, driving function generator means $F(d)$ electrically coupled to and directed as a second input to said second order programming computer means, said driving function generator means comprising a climb-cruise phase generator in series with a terminal phase generator, means within said climb-cruise phase generator to produce an output function

$F(t) = (b^aGG - aDm)/b + Dm)$ where $F(t)$ is the program variable defining the climb and cruise phases,

D_M is the slant range to the missile,

E_{GG} is the initial condition elevation angle of the guidance transmitter, and

a and b are constants, the output of said climb-cruise phase generator being directed as a first input to said terminal phase generator, means electrically connected to the input of said terminal phase generator providing a second input to said terminal phase generator relating to E_T, feedback means electrically connected to the output of said terminal phase generator to feed back the output $F(d)$ of said driving function generator as a third input to said terminal phase generator, means within said terminal phase generator for acting upon said first, second and third inputs prior to terminal phase initiation to produce an output function

$$k(t) = \int_G^P [F(d) + E_T - F(t)]dt,$$

means within said terminal phase generator to render ineffective said first, second and third inputs upon terminal phase initiation, means within said terminal phase generator to produce after terminal phase initiation a function $k(t) = k_T + 30\dot{k}_T(1 - 1^{-\tau_{TP}/30})$ where k_T is the value of $k(t)$ at terminal phase initiation.

K_T is the first derivative of k_T, and

T_{TP} is the time from terminal phase initiation to the present, means to feed back the output voltage e_o of said second order programming computer means to its input, and means delaying maximum gain sensitivity of said computer means until the missile is within a predetermined range of the target, whereby noisy input radar data is smoothed until maximum maneuverability of the missile is required.

3,741,503

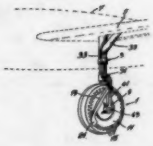
AIRCRAFT LANDING GEAR

Henry Cabeza, 2090 Cambridge Road, T.M.R., Montreal, Quebec, Canada

Filed Apr. 10, 1972, Ser. No. 242,521

Int. Cl. B64c *25/40*

U.S. Cl. 244—103 S **7 Claims**



Means for rotating an aircraft wheel wherein the tire of the wheel is formed with several peripheral vanes distributed in two adjacent coaxial circular rows and wherein a nozzle directs a jet of air on the vanes. The vanes of one of the two rows are arranged in the space between two successive vanes of the adjacent row. The nozzle has a fluid outlet sufficiently wide to cover both rows.

3,741,504

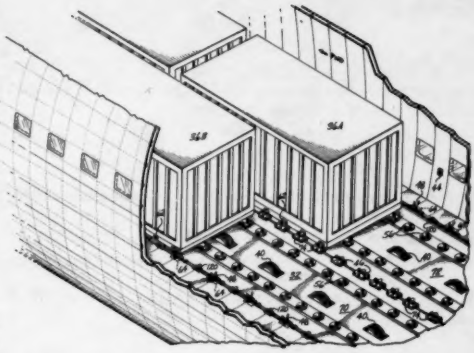
CARGO HANDLING SYSTEM

John Alberti, Seattle, and William W. Nanninga, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 6, 1971, Ser. No. 140,772

Int. Cl. B64c *1/22*

U.S. Cl. 244—137 R **5 Claims**



A cargo handling system for carriers but specifically for aircraft incorporating an automatic guide and restraint device which is utilized in cooperation with a side manually adjustable fore/aft locking device with a slaved vertical restraint device. During cargo loading operations, the system allows approximate positioning of a cargo carrying means, which means triggers automatically the engagement of center guide restraint devices; thereafter, the manually aligning and subsequent locking of side fore/aft locking devices and thereon engagement of connected slaved vertical restraint devices is accomplished; however, securing of the carrying means incorporates limited freedom so that the carrier structure is independently flexible from the cargo carrying means. During cargo unloading operations, manual disengagement of side fore/aft locking devices and activation of cargo propulsive means will move the cargo carrying means toward the exit and the cargo carrying means will automatically disengage the center guide device's restraints and the slaved vertical restraint devices. The center guide restraint device carries spring loaded restraint lips, mounted on a slidingly positioned body, which lips swing into the cargo carrying means' pocket and travel with the pocket for a given stroke length. When the stroke length is surpassed, the lip pivots out of the pocket and the slideable body recycles to its original position. The side lock is adjustable in fore and aft direction and is manually aligned and engaged with the cargo carrying means' pocket. The slaved vertical restraint device follows the alignment and provides for simultaneous engagement into a next pocket.

3,741,505

AERODYNAMIC DECELERATOR

Roger K. Engel, Sioux Falls, S. Dak., assignor to Raven Industries, Inc., Sioux Falls, S. Dak.

Filed Mar. 8, 1971, Ser. No. 121,702

Int. Cl. B64d *17/02*

U.S. Cl. 244—145 **3 Claims**

A parachute construction having a parachute canopy with

load lines extending downwardly therefrom for attachment to a load with the canopy formed of a fabric of random oriented

nylon filaments self-bonded at the filament junctions and may be calendered to a predetermined porosity.

3,741,506
PARACHUTE CANOPY

Richard Kohnke, Heinrich-Stoess-Strasse 31, Ziegelhausen bei Heidelberg, Germany

Continuation of Ser. No. 869,997, , which is a continuation-in-part of Ser. No. 700,772, Jan. 26, 1968, abandoned. This application Feb. 25, 1971, Ser. No. 118,950
Claims priority, application Germany, Jan. 27, 1967, P 15 06 051.2
Int. Cl. B64d *17/02*
U.S. Cl. 244—145 **2 Claims**

A parachute canopy, especially a cargo parachute, is made of one-piece gores composed of unwoven bonded fibrous textile material, such as spunbond. The canopy is inexpensive and disposable.

3,741,507
TIRE BEAD CORE RING

Friedrich Wilhelm Hahn, Nachrodt, Germany, assignor to Hahn & Co. KG, Nachrodt, Germany

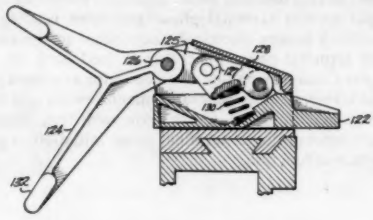
Filed June 2, 1971, Ser. No. 149,138
Claims priority, application Germany, June 2, 1970, P 20 26 874.0
Int. Cl. B60c *15/04*
U.S. Cl. 245—1.5 **17 Claims**

A tire bead core ring for being embedded within the bead of a tire including at least two cable rings each of a wire stem and at least one layer of wires concentric therewith, and at least one layer of wires encasing the cable rings and bringing them into a supporting and force-transmitting relationship.

3,741,508
CARGO HANDLING SYSTEM SIDE LOCKING DEVICE

John Alberti, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 6, 1971, Ser. No. 140,771
Int. Cl. B60p *7/08*
U.S. Cl. 248—119 R **3 Claims**



A cargo handling system for carriers but specifically for aircraft incorporating an automatic guide and restraint device which is utilized in cooperation with a side manually adjustable fore/aft locking device with a slaved vertical restraint device.

During cargo loading operations, the system, by the use of a conveyor arrangement inclusive of a cargo propulsive means allows the approximate positioning of a cargo carrying means, which means triggers automatically the engagement of the center guide restraint devices; thereafter, the approximate manually aligning and subsequent locking of the side fore/aft locking devices and thereon engagement of connected slaved vertical restraint devices is accomplished; however, the securing of the carrying means incorporates limited freedom so that the carrier structure is independently flexible from the cargo carrying means.

During cargo unloading operations, manual disengagement of the side fore/aft locking devices and activation of the cargo propulsive means will move the cargo carrying means towards the exit and upon movement the cargo carrying means will automatically disengage the center guide device's restraints and the slaved vertical restraint devices.

The center guide restraint device carries spring-loaded restraint lips, mounted on a slidingly positioned body, which lips swing into pockets provided in the cargo carrying means and travel with the pocket for a given stroke length. When the stroke length is surpassed, the lip pivots out of the pocket and the slideable body recycles to its original position.

The side lock is adjustable in fore and aft direction and is manually aligned and engaged with a pocket of the cargo carrying means. The slaved vertical restraint device follows exactly the alignment and provides for simultaneous engagement into a next pocket.

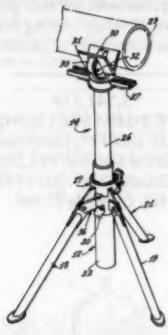
3,741,509
TRIPOD TYPE JACK ASSEMBLY

Lonnie M. Kelley, 11733 E. 166th Street, Norwalk, Calif.

Filed June 10, 1971, Ser. No. 151,812
Int. Cl. F16m *11/38*
U.S. Cl. 248—171 **3 Claims**

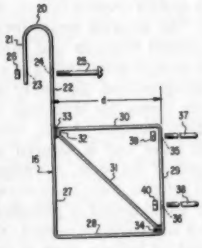
A tripod type jack assembly or support device including

camming means functioning — when activated — to maintain the legs in their folded side-by-side relation with the body of



the jack thereby rendering the assembly easier to transport and store.

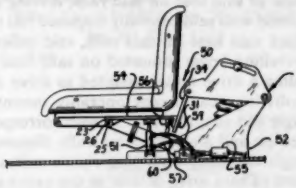
3,741,510
LADDER SUPPORT SPACER
Donnie G. Barnes, 2339 Truman Avenue, Pensacola, Fla.
Filed Dec. 10, 1971, Ser. No. 206,629
Int. Cl. F16m *13/02*
U.S. Cl. 248—229 **4 Claims**



A support and spacer device for ladders, especially suitable for use with scaffold structures, the device including a downwardly opening U-shaped hook supporting a rectangular frame having a diagonal brace. U-bolts are provided to surround the vertical side portion of a ladder, above and below a rung, and penetrate the side of the rectangle opposite the hook portion. The structure is advantageously made from a single piece of strap steel, one end thereof being formed into the U-shaped hook and the remainder thereof being bent, in four bends, into a rectangle having the diagonal brace. Two welds and five holes complete the structure which is normally used in pairs, more than one pair being advantageously employed with a movable scaffold or the like.

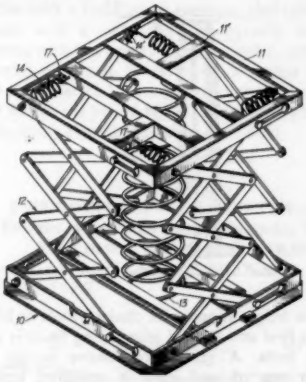
3,741,511
SEAT TILTING STRUCTURE
Glen E. Streeter, N. Ardinger Street, Hamilton, Mo.
Filed June 1, 1971, Ser. No. 148,325
Int. Cl. B60n *1/02*
U.S. Cl. 248—371 **2 Claims**

A seat tilting structure for movable vehicles and more particularly tractors, graders, earth working equipment, and the like, to permit a driver or operator thereof to remain in a substantially vertical position when the vehicle is in a non-level position includes a generally upstanding support standard having one end of a first portion of a tilting arm mounted thereon and extending outwardly therefrom and rotatably supporting a second portion of the tilting arm thereon which has a seat support member mounted thereon whereby a seat supported on



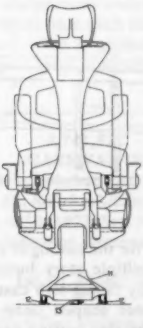
the seat support member may be selectively adjusted to a level position when the vehicle is in a non-level position.

3,741,512
SELF-LEVELING DISPENSER
Frank C. Olsson, East Lyme, Conn., assignor to AMF Incorporated, White Plains, N.Y.
Filed Nov. 4, 1971, Ser. No. 195,648
Int. Cl. A47b *9/00*
U.S. Cl. 248—399 **1 Claim**



A tongs type self-leveling dispenser having a main compression spring has releasable torsion springs for each of its tongs to provide additional rates of resistance.

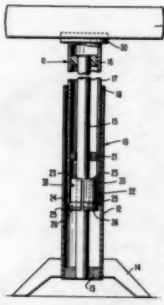
3,741,513
VEHICLE SEATS, ESPECIALLY AIRCRAFT SEATS
Anthony Ian Wilson, Leigh-on-Sea, Essex, England, assignor to Teleflex Limited, Basildon, Essex, England
Filed Nov. 19, 1971, Ser. No. 200,353
Int. Cl. F16m *13/00*
U.S. Cl. 248—429 **6 Claims**



In a vehicle seat a mount for said seat having a base which is adapted to be positionally adjusted fore-and-aft along a track

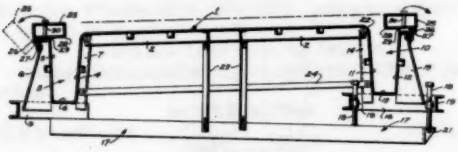
comprising three parallel equally spaced rails, roller means attached to said mount and so positioned thereon to ride on said parallel rails, said rails adjusted to support, guide and hold down said base of said seat on said rails, driving and locking means associated with said centrally disposed rail to selectively drive or lock said base on said rails, said roller means including a swivelling bogie mounted on said base, said drive means including a drive motor adapted to drive driving gear means, said driving gear means operably mounted on said swivelling bogie and adapted to mesh with corresponding rack teeth disposed on and along said centrally disposed rail, said swivelling bogie including a slipping clutch means to provide speed rundown of said drive motor, in the event said base of said vehicle seat is positionally locked on said rails.

3,741,514
QUICK ADJUSTABLE HEIGHT SUPPORT
Gordon R. Snurr, 520 West 6th Street, Waynesboro, Pa.
Filed Apr. 17, 1972, Ser. No. 244,464
Int. Cl. E04g *25/08*
U.S. Cl. 248—412 **10 Claims**



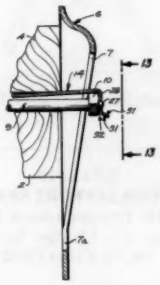
An adjustable height support for chairs, stools or like structures embodies first and second telescoping linearly movable assemblies or units. A gravity responsive wedge locking mechanism on one of said units is rendered inactive or released relative to the other unit by a mere lifting of the one unit carrying the locking device. Releasing of the one unit and allowing the same to drop freely serves to activate the locking device substantially instantaneously. An infinite range of height adjustment is available without the necessity for manual levers, handles or the like.

3,741,515
VARIABLE PITCH FORM
Edward K. Rice, 2077 Linda Flora Drive, Los Angeles, Calif.
Filed Nov. 24, 1971, Ser. No. 201,865
Int. Cl. B28b *7/08*
U.S. Cl. 249—26 **10 Claims**



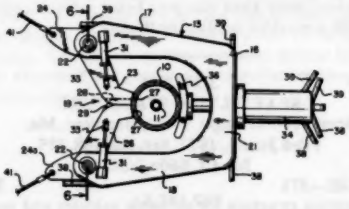
A variable pitch form for the casting of concrete slabs which become modules of multiple story building structures, the form having an upwardly facing slab casting panel bordered longitudinally by channel shaped beam casting forms integrally connected to the slab casting panel by flexible fillet casting strips. Means are provided for raising and lowering one longitudinal margin of the slab casting panel and the corresponding beam casting form while maintaining the beam casting forms as well as leg casting forms at the corner of the slab in an essentially vertical position. Outboard end forms are provided to match various selected slab pitches or slopes. The beam forms carry pivotal ledge casting forms to provide longitudinal ledges for the support of adjacent modules.

3,741,516
CONCRETE FORM SECURING MEANS
Warren E. Rugger, P.O. Box 127, Lakewood, Calif.
Continuation-in-part of Ser. No. 191,181, Oct. 21, 1971, abandoned. This application Mar. 31, 1972, Ser. No. 240,005
Int. Cl. E04g *17/06*
U.S. Cl. 249—216 **10 Claims**



A securing means for maintaining the two sides of a concrete form in fixed spaced relation before, during and after pouring the concrete. The securing means includes a tie wire or rod intended to extend between and through a pair of spaced forms and one embodiment having at each end a double head capable of being twisted, the rod being weakened in the region between the forms, for severance for removal on application of sufficient torque. A tie strap is received between each double head and is secured to the form to prevent inward collapse of the form. A wedge engages each headed end to prevent relative inward and outward movement of the form. Another embodiment is provided with a single polygonal head at each end having a central axially extending projection and the end of the tie strap is provided with a lateral portion having a perforation fitting the projection.

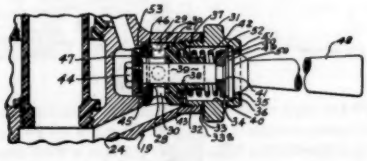
3,741,517
SUBTERRANEAN CLAMPING MECHANISM FOR SUBMARINE WELLS
Ivo C. Pogonowski, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Feb. 9, 1971, Ser. No. 113,842
Int. Cl. F16k *7/07*; **E21b** *33/06*
U.S. Cl. 251—5 **1 Claim**



The invention relates to a marine apparatus which includes a clamping device that is submergible beneath the water's surface to be aligned with, and to squeezably deform the upstanding well casing of an uncontrollably flowing well. The apparatus includes a clamping yoke having spaced apart arms

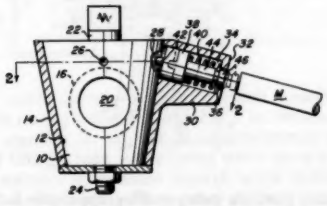
which define an opening or slip for registering about the upstanding well casing. A pair of displaceable cross members extend from the termini of the arms to interlock with each other and to engage the well casing. A hydraulic cylinder carried on the yoke is adapted to urge the clamping device into contact with the casing whereby to deform and crush the latter against the interlocked cross members.

3,741,518
RELIEF VALVE MECHANISM FOR FLUSHOMETERS
Oscar L. Engstrom, 35 Bond Street, Long Island, N.Y.
Filed Oct. 20, 1971, Ser. No. 190,771
Int. Cl. F16k *31/383*
U.S. Cl. 251—44 **5 Claims**



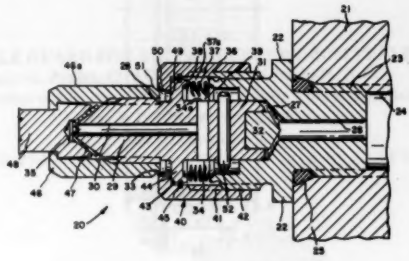
A manually actuated relief valve member particularly suitable for temporarily relieving or "bleeding" a pressure head in flush valves or flushometers for instituting a flushing cycle therein, is described. An actuating handle controls operation of a rod member slidably arranged within a valve body member and having at its inner (high pressure) end a circular washer seatable upon an annular valve seat at the inner end of the valve body member. A first water flow passageway leading to the high pressure end of the release valve mechanism is such as to present greater resistance or impedance to water flow than a second water release passageway leading from the low pressure end of the relief valve mechanism so that substantially no pressure head can develop between the high and low pressure ends, (inner and outer ends) of the valve body member, thereby substantially eliminating leakage to the outer end of the valve body member and preventing leakage at the handle without the use of packing glands and the like.

3,741,519
LOCK MEANS FOR PLUG VALVES
Carl W. Moyer, Junction City, Ohio, assignor to Allied Machine Works, Zanesville, Ohio
Filed Mar. 29, 1971, Ser. No. 128,829
Int. Cl. F16k *35/06*
U.S. Cl. 251—111 **20 Claims**



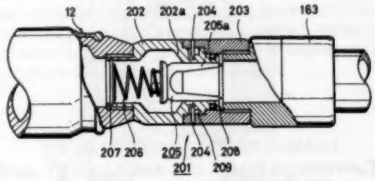
The plug valve disclosed includes a spring loaded locking detent which can be disengaged from the valve plug to unlock it, only by means not readily apparent to the layman, such means being a magnetized implement.

3,741,520
BELLOWS SEALED SHUTOFF VALVE
Thomas C. Richmond, Cumberland, R.I., assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 13, 1970, Ser. No. 27,935
Int. Cl. F16k *1/50*
U.S. Cl. 251—144 **2 Claims**



A positive-shutoff valve in combination with a chamber chargeable with a fluid under pressure, the valve having a tubular base with a valve seat, a coaxially movable piston cooperating with this seat to close the valve, and a flexible, tubular metal enclosure surrounding a sealed flow chamber between said seat and a second duct through the piston. An actuator moves the piston between open and closed positions, and an auxiliary closure seals the piston duct.

3,741,521
PIPE COUPLING WITH SAFETY VALVE
Hiyoshi Tatsuno, 4-4-11 Shirogane, Minato-ku, Tokyo, Japan
Filed June 3, 1971, Ser. No. 149,694
Int. Cl. F16l *29/00, 37/28*
U.S. Cl. 251—149.7 **3 Claims**

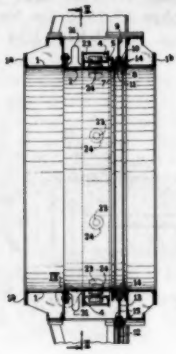


A safety pipe coupling for liquid dispensing machines, which is particularly useful for a suspended nozzle type liquid fuel supplying device, has a first portion which includes a valve means biased by a spring toward its valve seat, a second portion connected to a nozzle at one end, means for connecting said first and second portions under normal conditions and for releasing the portions from each other when a stress larger than a predetermined value is applied therebetween, and a means for holding said valve open against the spring during normal conditions.

3,741,522
GATE VALVE
Karl Heinrich Frohlich, Rohrbach/Saar, Germany, assignor to Th. Jansen G.m.b.H., Rohrbach/Saar, Germany
Filed June 10, 1971, Ser. No. 151,678
Claims priority, application Germany, June 12, 1970, P 20 29 146.7
Int. Cl. F16k *3/10*
U.S. Cl. 251—159 **3 Claims**

A gate valve in which four shifting devices, driven in pairs, engage the four corners of a rectangular frame. The latter transmits force, through eight force-transmitting points,

namely two pointsper frame side, to a pressure applying pipe which is axially movable and adapted to lock the gate in posi-



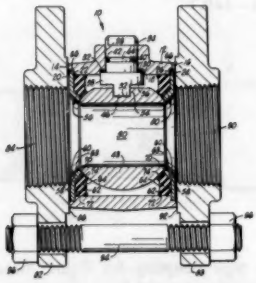
tion or release it. The eight points are evenly spaced about the periphery of the pressure-applying pipe so that the forces are distributed in an excellent manner on the gate.

3,741,523

SEAT FOR BALL VALVE

Domer Scaramucci, Oklahoma City, and Ladd M. Adams, Norman, both of Okla., assignors to Balon Corporation, Oklahoma City, Okla.

Filed Aug. 30, 1971, Ser. No. 175,871
Int. Cl. F16k *5/06*
U.S. Cl. 251—315 **22 Claims**



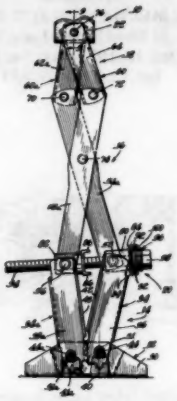
An improved ball valve wherein each annular valve seat comprises a stamped metal seat ring disposed in a respective end of the valve body with the inner periphery of the seat ring conforming to and sealingly engaging the valve ball. An elastomeric annular seal is bonded to the side of the seat ring adjacent the valve ball and sealingly engages the valve ball and the bore through the valve body. The outer periphery of the annular seal has a diameter greater than the bore and is deformed by the bore to provide sealing engagement therewith and to retain the annular valve seat in the valve body during shipment and assembly of the valve in a pipeline. An elastomeric annular seal bead is bonded to the side of the seat ring opposite the annular seal to provide sealing engagement between the valve and a pipe flange carried by the pipeline. In another form the stamped metal seat ring is sized and shaped to conform to the periphery of a relatively deep counterbore formed in the valve body. In another form a circumferential bead is formed on the outer periphery of the annular seal and matingly engages an annular groove formed in the bore through the valve body.

3,741,524

SCISSORS JACK

George H. Morgan, and Robert Harlan Nehrig, both of St. Joseph, Mich., assignors to Auto Specialties Manufacturing Company, St. Joseph, Mich.

Filed Sept. 18, 1970, Ser. No. 73,293
Int. Cl. B66f *3/22*
U.S. Cl. 254—122 **10 Claims**



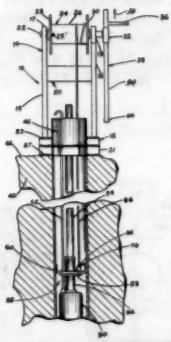
A scissors jack, constructed in accordance with the present invention, is disclosed herein and generally includes a base supporting a lower link assembly, an intermediate link assembly and an upper link assembly, all of which cooperate with each other and with a screw assembly for driving a load lifting element between a lowered or load releasing position and a raised or load lifting position.

3,741,525

PUMP-PULLING APPARATUS FOR WELLS

William L. Smedley, 245 Graham Road, N.W., Grand Rapids, Mich.

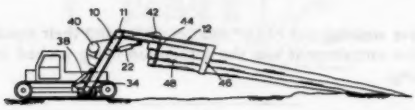
Filed Dec. 15, 1971, Ser. No. 208,218
Int. Cl. B66c *23/60*
U.S. Cl. 254—139 **5 Claims**



A compact, portable pump-pulling apparatus for lifting a sealed submersible pump from a well casing includes a frame adapted to be securely mounted to the well casing. A drum is rotatably mounted within the frame by an axle which has a slidably mountable handle at one end for rotating the drum. The drum has means for securing one end of a lifting cable thereto, the other end of which is attached to a seal located above the submersible pump. Winding the cable on the drum

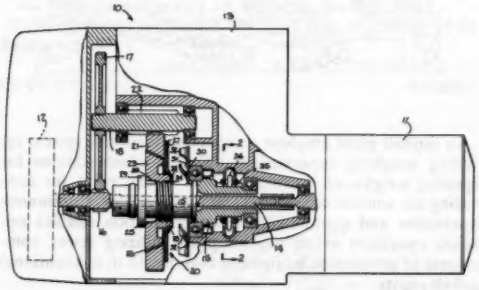
pulls the pump, seal and pipe from the well. Incorporated into the device are means to secure it to the head of the well casing thereby eliminating the necessity for a base structure to stabilize and support the pulling apparatus. The means also provides positive alignment with the casing.

3,741,526
LOADING AND CONVEYING DEVICE TO BE MOUNTED ON A TRACTOR OR THE LIKE
Hans Kasin, and Odd Krane Thvedt, both of Notodden, Norway, assignors to Christiania Spigerverk, Division JoBU
Filed June 1, 1971, Ser. No. 148,812
Int. Cl. B66c *26/30*
U.S. Cl. 254—139.1 **6 Claims**



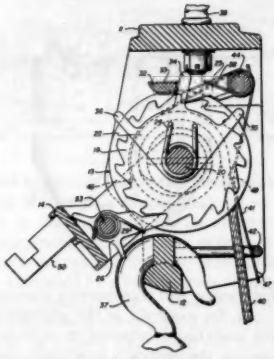
A loading and conveying device for timber logs and the like to be mounted on a motor vehicle. The device comprises an upright mast with a rearwardly directed cantilevered loading beam provided with means for hoisting and carrying the fore end of the load, such as a bundle of timber logs or the like, the rear end of which rests on the ground. The cantilevered beam is at the rear end provided with a transverse yoke member adapted to rest against and partly around the bundle. The winch equipment includes a hoisting strap depending from a point on the cantilevered beam positioned closer to the mast proper. The mast is in its mounting on the tractor body pivotally supported about a horizontal as well as about a vertical axis.

3,741,527
STRESS LIMITING HOIST
Robert R. Dahl, Forrest City, Ark., assignor to Eaton Corp., Cleveland, Ohio
Filed Oct. 12, 1971, Ser. No. 188,287
Int. Cl. F16d *7/02*; B66d *1/12*
U.S. Cl. 254—168 **10 Claims**



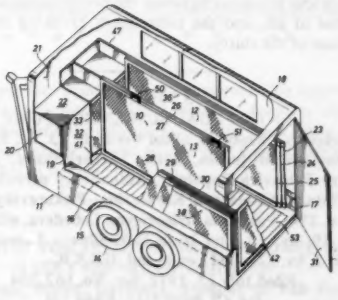
A hoist motor operates a hoist load shaft through an overload clutch having a circular gear that is in frictional relation to a disc member for applying a predetermined amount of torque for lifting a load, and slipping when there is overload. The disc member is mounted through screw threads on the load shaft and pressing the member against a shoulder to transmit the predetermined torque in load lifting direction. The screw threads have a limited length in axial direction that causes them in effect to disengage when the hoist motor rotates the disc in load lowering direction. The clutch cannot then apply the predetermined torque but a spring presses end portions of the threads against each other so as to transmit torque that is limited to a small amount, much less than the frictional surfaces of the clutch would accept. The load shaft operates a load chain having a limit member that strikes a stop surface on the hoist frame to limit lowering movement of the hoist. The hoist stress that is due to the small amount of lowering torque, when added to the considerable stress that may be due to a load when the chain limit member strikes the stop surface of the hoist, will be insufficient to overstress parts of the hoist.

3,741,528
CABLE GUARD FOR RATCHET LEVER DRUM PULLER
Anthony G. Profet, 4212 Oldfield Road, Charlotte, N.C.
Division of Ser. No. 2,895, Jan. 14, 1970,. This application Jan. 3, 1972, Ser. No. 215,232
Int. Cl. B66d *1/00*
U.S. Cl. 254—190 R **1 Claim**



A cable guard is provided for use in connection with a Ratchet Lever Drum Puller having a ratchet toothed wheel integrally cast with the drum, and having a reverse ring construction. The cable guard is provided from a single sheet of material which also assists in preserving the helical wind of the cable, and the cable guard cooperates with a cable guide to assist in securing the former, and to deter improper positioning of the dead end hook on the cable guide.

3,741,529
TRAILER-BORNE HORSE CORRAL
Leon Blagg, Flying X Ranch P.O. Drawer H, Bertram, Tex.
Filed June 6, 1972, Ser. No. 260,217
Int. Cl. E04h *17/18*
U.S. Cl. 256—26 **21 Claims**



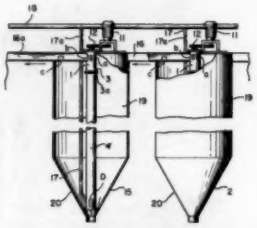
In the representative embodiment of the present invention disclosed herein, a uniquely-arranged corral is formed of a plurality of pivotally-intercoupled upright panels which are adapted to be folded together into a compact assembly. In this manner, when the assembly is placed in a typical horse trailer,

the trailer interior is appropriately divided into two side-by-side stalls of a comfortable size. On the other hand, when the assembly is unloaded from the trailer, its unique self-supporting arrangement allows the several panels to be easily extended for providing a sturdy, well-proportioned, divided corral of about five times the area occupied by the folded assembly within the trailer.

3,741,530
APPARATUS FOR STIRRING AND TRANSPORTING SLURRIES

Constantin C. Stefanoiu, Oradea, Romania, assignor to Uzina De Alumina Oradea, Soseauau Borsului Kn., Romania

Filed Oct. 26, 1971, Ser. No. 192,629
Claims priority, application Romania, Oct. 23, 1970, 64770
Int. Cl. B01f 7/24, 15/02
U.S. Cl. 259—67 **6 Claims**



Apparatus for stirring and transporting slurries in vessels of great volume used, for example, in the alumina industry. The apparatus of the invention is adapted to replace, with greater economic efficiency, the generally previously-used pneumatic system for the stirring and transportation of slurries. The present apparatus uses a tube centrally placed in the vessel; a turbine pump driven, for example, by an electric motor, is mounted in the tube. The turbine pump raises the slurry to the level of some apertures or windows in the tube. The thus-raised slurry overflows through the windows to fall partly into the same vessel and partly into a conduit for transportation out of such vessel. The conduit has windows through which the level of the slurry is maintained constant in the vessel. The device provides an intensive stirring and the transportation of the slurry independent of the volume of the vessel and independent of the density of the slurry, with a much lower power consumption as compared to pneumatic stirring. Such intensive stirring eliminates the encrustation on the bottom of the vessels and on the side walls of the receiver. The system of the invention also ensures the perfect vertical homogenization of the slurry, eliminating at the same time foaming and the eventual chemical reactions between the components of the slurry and those of air, and the consequent breaking down of the solid phase of the slurry.

3,741,531
CENTRIFUGAL SUSPENSION PUMP

Igor Jurievich Chaplygin, ulitsa Vernosti, 13, kv. 157; Dmitry Nikolaevich Mitjushin, ulitsa Varvarinskaya, 30, kv. 1; Dmitry Petrovich Zapolnov, Antonovsky pereulok, 13, kv. 51; Natalia Nikolaenva Karamzina, Piskarevsky Prospekt, 16, kv. 290; Valentina Grigorievna Lebedeva, ulitsa Khalturina, 19, kv. 10, and Irina Mikhailovna Lomagina, ulitsa Glinki 2, kv. 32, all of Leningrad, U.S.S.R.

Filed July 13, 1971, Ser. No. 162,204
Int. Cl. B01f 5/16; F04d 1/0
U.S. Cl. 259—96 **3 Claims**

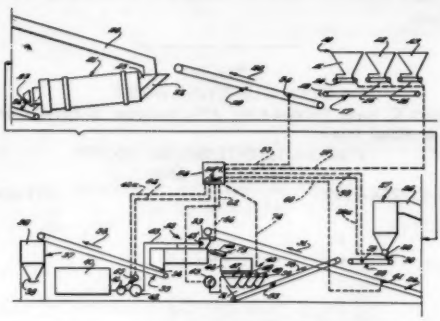
The invention relates to the pump for handling suspensions and forming them concurrently the main distinctive feature of this pump being additional vanes installed on the impeller and intended to bring solid particles to a suspended state, said vanes being arranged radially around the suction opening of the pump. Such a design ensures a strong turbulent flow which is concentrated in the suction zone and which provides for an

intensive washing out of the solid particles and their equally intensive entrainment into the suspension being sucked into the pump.

3,741,532
PROPORTIONING CONTROL SYSTEM FOR AN ASPHALT PLANT

Robert E. Farnham, Naperville; Fredric W. Prill; Donald W. Smith, both of Aurora, and James L. Plociennik, North Aurora, all of Ill., assignors to Barber-Greene Company, Aurora, Ill.

Division of Ser. No. 856,007, Sept. 8, 1969, Pat. No. 3,625,488. This application Mar. 26, 1971, Ser. No. 128,586
Int. Cl. B28c 7/04
U.S. Cl. 259—149 **7 Claims**



An asphalt plant employs a supervisory control system including weighing apparatus at different plant stations for signaling weights of flowing material in the plant for controlling the amount of material and bitumen flow. Continuous supervision and control of asphalt production enables optimum operation of an asphalt plant utilizing fewer components of production equipment than found in conventional asphalt plants.

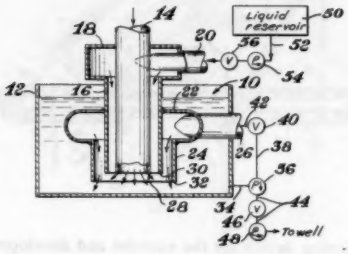
3,741,533
MIXING APPARATUS

Fred M. Winn, Jr., Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 14, 1971, Ser. No. 189,247
Int. Cl. B01f 5/12, 15/02
U.S. Cl. 259—4 **6 Claims**

This invention relates to apparatus for continuously mixing dry bulk material with a liquid to form a slurry. The apparatus provides for the dry material to be added to the liquid for initial wetting of the dry material. The wetted material is then directed against a baffle from which it is deflected into a reser-

voir. The slurry thus formed is circulated by a suitable pump from the reservoir through a system of piping back into a shroud enveloping the initial wetting device, and is discharged with a rotary motion back into the reservoir. Centrifugal force resulting from rotary motion of the slurry prevents material from splashing back into the dry material delivery tube.



In the initial wetting stage of the system, the liquid is formed into a hollow cylindrical pattern within and more or less concentric with the circulating slurry which has also been shaped into a hollow cylindrical pattern, revolving helically as it exits into the reservoir. The dry material is introduced into the hollow center of the liquid cylinder, and therefore must pass through the liquid before exiting into the reservoir.

ERRATA

For Classes 261—078, 261—140, and 266—23 thru 269—96 see:
Patents Nos. 3,741,551, 3,741,552 and 3,741,555 thru 3,741,563

3,741,534

CONTROL DEVICE FOR GUIDE MOTION REVERSAL AND THE REGULATION OF TRAVELLING SPEED OF MACHINES AND ESPECIALLY FABRIC FOLDING MACHINES

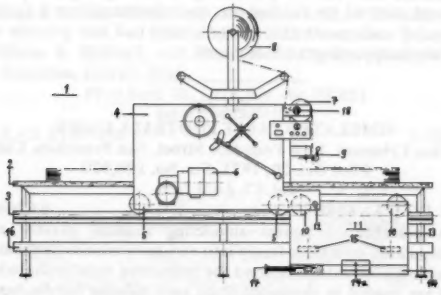
Gunter Stumpf, Hohenweg 13, Kries Munsingen, 7421 Mehrstetten, Germany

Continuation of Ser. No. 889,620, Dec. 31, 1969, abandoned. This application Oct. 28, 1971, Ser. No. 193,309

Claims priority, application Germany, Nov. 7, 1969, P 19 56 216.4

Int. Cl. B65h *29/46*

U.S. Cl. 270—31 **9 Claims**



To control a carriage of a machine such as a fabric folding machine, a handle or knob is provided to rotate a member accommodated within the same. This member has a circumferential groove in which are accommodated the levers of switches controlling the direction of rotation of a motor which drives the carriage. A gear train driven by said member controls a potentiometer which controls the speed of the motor.

3,741,535

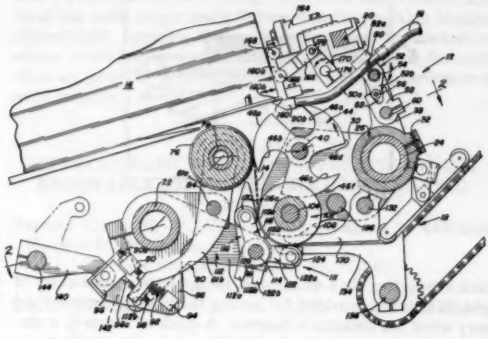
SHEET STOCK FEEDING MECHANISM

Victor Palkovic, Westchester, and Harry F. Semple, Des Plaines, both of Ill., assignors to Garden City Envelope Company, Chicago, Ill.

Filed May 17, 1971, Ser. No. 144,195

Int. Cl. B65h *3/08*

U.S. Cl. 271—101 **15 Claims**



The described apparatus feeds sheet stock such as envelope blanks from the bottom of a supply stack into a transporting conveyor such as the conveyor for an envelope-converting machine. The apparatus includes a pair of transverse load-supporting members. A segment feed roll is mounted on a drive shaft which is journaled in a first bearing member affixed to one of the supporting members. A pinch feed roll is disposed adjacent the segment feed roll to form a nip through which the sheet stock may be drawn. The pinch roll has a drive shaft journaled in a second bearing member which is resiliently mounted on the other of the transverse supporting members, and this drive shaft is driven through a universal coupling.

3,741,536

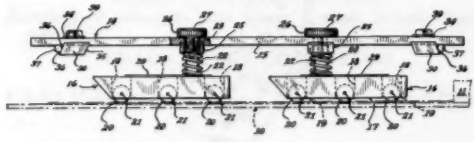
REGISTER BAR FOR PRINTING PRESS SHEET CONVEYORS

Eugene A. Anderson, 414 W. Taylor Road, Lombard, Ill.

Filed July 13, 1971, Ser. No. 162,220

Int. Cl. B65h *9/00*

U.S. Cl. 271—48 **7 Claims**



A ball support for printing press conveyors. The support has quick attaching facilities with adjustment features allowing precise location of balls relative to register stops while allowing adjustment of the height of the ball support above the paper being fed to the register stops.

3,741,537

APPARATUS FOR FEEDING THE PILE BOARD OF A SHEET SEPARATING DEVICE

Werner Lange, Berlin, Germany, assignor to Veb Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany

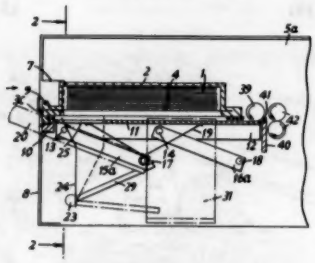
Filed July 16, 1971, Ser. No. 163,339

Int. Cl. B65h *1/00*

U.S. Cl. 271—61 **13 Claims**

A photo-copying apparatus has a housing containing a stack receiving platform, means for separating and feeding sheets

from a stack on the platform and a replaceable cassette. An aperture in the housing adjacent the platform enables the cassette to be inserted. Guides for supporting the cassette above the platform are provided which cassette has a withdrawable



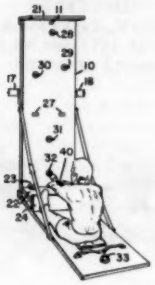
stack supporting slide which seals the cassette against entry of light. Means are provided for sealing the housing against light entry when the cassette is inserted. A stack of sheets in a cassette in the housing can be transferred to the platform by withdrawal of the slide.

3,741,538

FRICTION TYPE EXERCISING DEVICE MOUNTED ON A COLLAPSIBLE STRUCTURE

Fred Lewis, El Dorado Hills, and Ronald E. Useldinger, San Jose, both of Calif., assignors to Ronald E. Useldinger, San Jose, Calif.

Filed Mar. 22, 1971, Ser. No. 126,679
Int. Cl. A63b *21/00, 21/20, 21/10*
U.S. Cl. 272—58 **1 Claim**



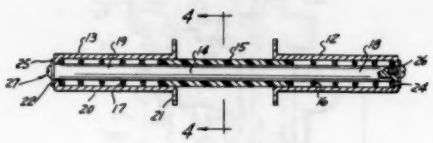
Collapsible physical exercising apparatus that may be folded into a compact unit when not in use. This apparatus is provided with a vertical panel having means for detachably attaching a friction-type cord gripping device thereto. Said device is provided with a device having a variable frictional resistance developed by a cord wrapped around a shaft and having a handle that is gripped by the operator in performing various physical exercises. This apparatus is also provided with a short panel and a long horizontal panel which are pivotally attached to the bottom part of the vertical panel. The long panel is provided with a pad upon which the operator rests during the performance of other physical exercises such as exercises simulating the rowing of a boat and the pedaling of a bicycle and the short panel functions as a foot brace during the rowing exercise.

3,741,539

SPRING RESISTANT TYPE OF EXERCISING DEVICE

Teresa E. Hutchins, and Robert L. Hutchins, both of 302 North McKinley, Flushing, Mich.

Filed July 1, 1971, Ser. No. 158,673
Int. Cl. A63b *21/00*
U.S. Cl. 272—83 R **1 Claim**



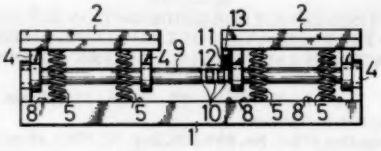
An exercising device for the exercise and development of arm, chest and shoulder muscles having a compression spring between two handles which are grasped and pushed toward each other thereby causing the user's muscles to work against the force of the spring.

3,741,540

NETHER LIMBS TRAINING IMPLEMENT

Yasuhiro Shimizu, No. 1072 Shimoishihara, Chofu-shi, Tokyo, Japan

Filed Jan. 3, 1972, Ser. No. 214,558
Claims priority, application Japan, Oct. 25, 2971, 46/98103; Oct. 25, 1971, 46/98102
Int. Cl. A63b *23/04*
U.S. Cl. 272—83 R **1 Claim**



A nether limbs training implement having footboards having formed on its surface a plurality of protuberances, the footboard being jointed to a base block so that the footboard is swingable upwards. Springs are disposed between the footboard and base block to provide a force acting to push up one side of each of the footboards. One footboard has a spring mounted underneath that forces a steel ball into grooves on the shaft supporting the footboards.

3,741,541

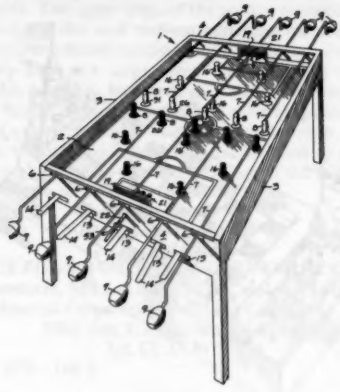
SIMULATED TABLE FOOTBALL GAME

Nerino Crismani, 1250 Francisco Street, San Francisco, Calif.

Filed Oct. 20, 1971, Ser. No. 190,920
Int. Cl. A63f *7/06*
U.S. Cl. 273—85 H **6 Claims**

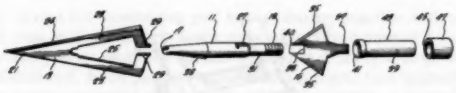
A plurality of figures simulating football players are manipulated on a table freely into various positions by tubular handles which extend beyond the respective ends of the table and are guided in elongated slots; each tubular handle has a resilient squeeze bulb adapted to be gripped for suitable manipulation of the respective playing figure and, when the ball is adjacent to a figure, by squeezing the bulb air is blown through a nozzle against a plate simulating kicking feet, which swings the feet against the ball so that the ball appears to be kicked by the player. Other figures, corresponding to defensive players on each team, are manipulated through handle

bars extended beneath the table with magnets at their inner ends adjacent the magnetic bottoms of the respective defen-



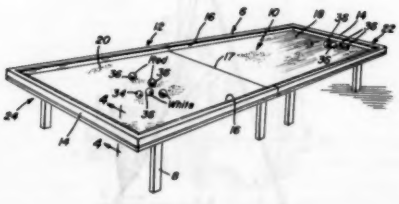
sive figures; in addition a goalie figure at each end is provided with a manipulator for moving hand-like members to grip the ball.

3,741,542
ARROWHEAD WITH REMOVABLE BLADES
Richard S. Karbo, Whittier, Calif., assignor to Brunswick Corporation, Chicago, Ill.
Filed Feb. 11, 1971, Ser. No. 114,586
Int. Cl. F41b 5/02
U.S. Cl. 273—106.5 B **3 Claims**



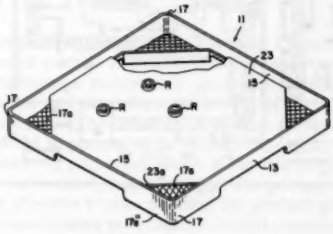
A readily disassemblable hunting arrowhead including a first blade engaged in a slot communicating with the front end of the collet and a second blade, orthogonal to the first, engaged in a second slot communicating with the rear end of the collet. Rearwardly and inwardly extending portions of the blades form wedge shaped elements which are engaged and wedged onto the collet by a beveled furrule threaded onto the rear of the collet. There is a windsplit attached to the collet in front of each side edge portion of the second blade.

3,741,543
TABLE GAME WITH TARGET BALL AND SPHEROIDAL CURLING BOWLS
William B. McPhail, and Hazel M. McPhail, both of 14637 Evanston, Detroit, Mich.
Filed Sept. 28, 1970, Ser. No. 75,831
Int. Cl. A63d 3/00
U.S. Cl. 273—118 R **1 Claim**



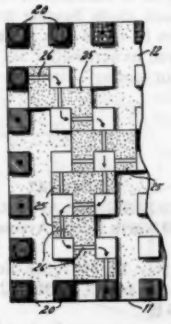
A projectile-type game device for indoor and outdoor use characterized by an elevated table having a planar carpet-covered playing surface marginally encompassed by cushioned rails. A centralized transverse marker line divides the surface into a starting field which is located at the head of the table and a scoring field at the foot. A freely rotatable target ball provides a jack. A plurality of manually manipulable curling bowls are provided and are adapted to be slid, spun and delivered into the scoring field in a manner that they will come to a stop in a position as close as possible to the target ball. The peripheral surface of each curling bowl is provided with a concaved recess forming a seat for a user's thumb and tip of the index finger and a flattened surface portion located diametrically opposite the recess. The player or contestant whose bowls are closest to the jack will count one for each close-up position. Play is continued until a predetermined score is made.

3,741,544
SURFACE PROJECTILE GAME APPARATUS HAVING REMOVABLE AND REVERSABLE GAME-PLAYING PANEL
Norman C. Wolff, Jr., Clayton, Mo., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.
Filed Feb. 20, 1970, Ser. No. 12,949
Int. Cl. A63f 3/00
U.S. Cl. 273—126 R **8 Claims**



A game assembly having a frame unit with corner pockets, and a removable and reversible playing surface panel. The corner pockets may be rigid or flexible, and if rigid such may serve as feet for the frame unit. A plurality of discs or rollable objects, such as balls, may be employed in playing various games.

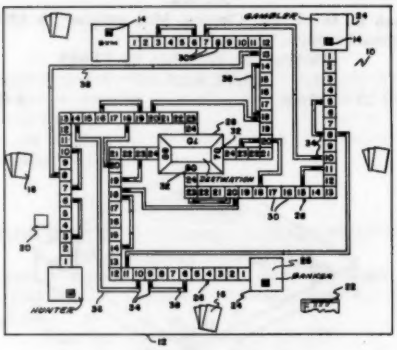
3,741,545
BOARD GAME CONSTRUCTION
Joseph A. Weisbecker, 1220 Wayne Avenue, Erlton, Cherry Hill, N.J.
Filed Oct. 13, 1971, Ser. No. 188,864
Int. Cl. A63f 3/00
U.S. Cl. 273—131 B **7 Claims**



A game board wherein a plurality of spaced areas are provided on a background, which spaced areas are marked dif-

ferently from the background, and a plurality of separate elements are removably located on the background between selected areas, the separate elements being marked to visually blend with the background and also to present visual connections between the spaced areas.

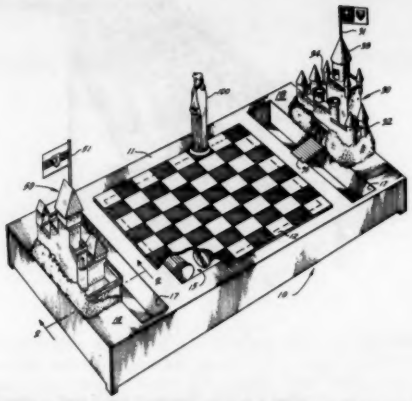
3,741,546
BOARD GAME APPARATUS
Chi-Sin Chen, 2513 Rice, Ponca City, Okla.
Filed Jan. 28, 1971, Ser. No. 110,400
Int. Cl. A63f 3/00
U.S. Cl. 273—134 AD **2 Claims**



A game structure utilizing a main game board member, a plurality of game player pieces, a stack of bonus cards, a plurality of score sheets, and a rule booklet, wherein the game simulates one's real life. The game board has a plurality of starting positions interconnected by selectable pathways to a main winning or central destination goal. The selectable pathways comprise main individual pathways, equal in number to the number of starting positions and each leading directly to the destination goal, together with alternate pathways, some of which by-pass consecutive spaces in the main individual pathways, and others of which lead from one main individual pathway to another. The plurality of main individual pathways are divided into an equal number of spaces between their respective starting positions and the common destination goal. The spaces along the main individual pathways are adapted to each and all be covered by individual cards, each of such cards bearing indicia stating either a number of steps to be taken or a score to be acquired, such cards being referred to hereinafter as "instruction" cards, or as a movement— or scoring—directing cards.

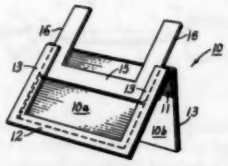
3,741,547
CHESS GAME APPARATUS
George Zurek, 300 North Euclid Avenue, Apt. 208, Pasadena, Calif.
Filed Nov. 12, 1971, Ser. No. 198,141
Int. Cl. A63f 3/02
U.S. Cl. 273—136 B **6 Claims**

A game board apparatus is disclosed which is particularly adapted to stimulate interest in the game of chess. A chess board and two model castles are supported by a base having moat-like trenches adjacent opposite marginal edges of the chess board. Each model castle is disposed at a respective



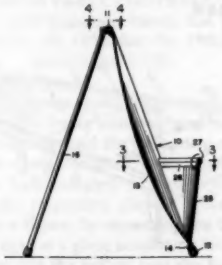
playing end of the base and separated from the chess board by the adjacent moat. Each has a pivotally mounted drawbridge extendible across its adjacent moat.

3,741,548
JIG-SAW PUZZLE BOARD WITH FRAMING INSERTS HAVING VARIOUSLY SHAPED OPENINGS
Donald H. Kaupp, 162 West 54th Street, New York, N.Y.
Filed May 10, 1972, Ser. No. 251,902
Int. Cl. A63f 9/10
U.S. Cl. 273—157 R **4 Claims**



A board for holding jig-saw puzzles having inserts shaped to conform to various sizes and shapes of puzzle. The inserts are slidable in the channels in the board and, when in place, have central openings conforming to contour of the puzzle to be assembled.

3,741,549
GOLF TARGET
Frank Wilson, Box 102, Grayslake, Ill.
Filed July 28, 1971, Ser. No. 166,920
Int. Cl. A63b 69/36
U.S. Cl. 273—181 A **5 Claims**



A golf ball target structure for practicing chip shots and the like has a flexible target area, made of canvas or similar

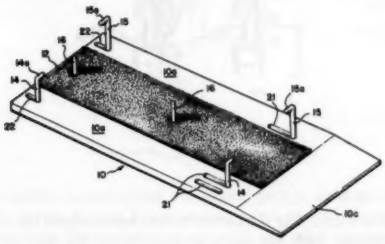
material and a pocket attached to the lower part of the structure for receiving and collecting golf balls after striking the target area. The upper edge of the pocket is supported by an elongated, flexible and resilient stiffening member which is maintained in a flexed condition for holding the pocket spaced forwardly from the target area. The stiffening member is removable and may be stored in a flattened condition. The flexible target area is supported by a frame generally in the shape of a circle having a flattened chordal section, which permits the target to be rolled from one location to another. A pivoted leg connected to the upper edge of the frame permits the inclination of the target to be varied.

3,741,550

DEVICE FOR MONITORING GOLF PRACTICE SWINGS

John Landures, Salt Lake City, Utah, assignor to Dynasty Oil and Minerals Corporation, Salt Lake City, Utah

Filed Dec. 3, 1971, Ser. No. 204,596
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 R **6 Claims**



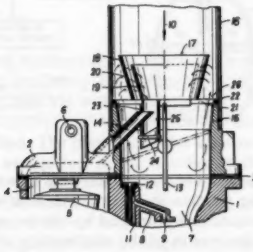
A device for monitoring golf swings during practice with a golf club utilizes knock-down pegs pivotally mounted in a practice pad in mutually spaced relationship along a strip of artificial turf. Each peg has a preferably integral foot formed as a transverse pivot pin and rotatably received by a journal recess formed in the underside of the practice pad, the normally upright portion of the peg extending upwardly through the practice pad to be knocked down if and when hit during a practice swing. The practice pad is molded from a flexible resilient material to provide integral detents bordering the recesses. These yield to permit insertion of the pegs from the underside of the pad and serve to retain the pegs in operative position once inserted.

3,741,551

CARBURETORS FOR INTERNAL COMBUSTION ENGINES

Georg Hammerschmied, Schanzelgasse 4, A8010 Graz, Austria

Filed June 10, 1971, Ser. No. 151,714
Int. Cl. F02m *29/04*
U.S. Cl. 261—78 R **14 Claims**



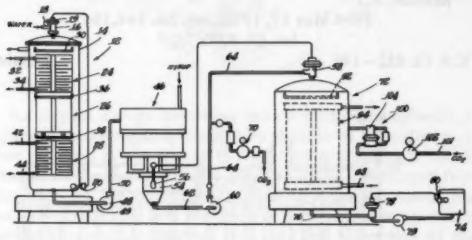
A carburetor for internal combustion engines, wherein for the purpose of improving the fuel-and-air mixture a hollow body open in the direction of the suction port axis and having apertures on the peripheral surface is provided in the suction port in front of the fuel outlet, a fuel-and-air-mixture current thereby forming around said hollow body in opposition to the main current in the suction port.

3,741,552

SYSTEM AND METHOD FOR CARBONATING BEVERAGES

Sigmund P. Skoli; Chester J. Witt, and Harry G. Mojonnier, all of 4601 W. Ohio St., Chicago, Ill.

Filed Mar. 24, 1969, Ser. No. 809,661
Int. Cl. B01f *3/04*
U.S. Cl. 261—140 **25 Claims**



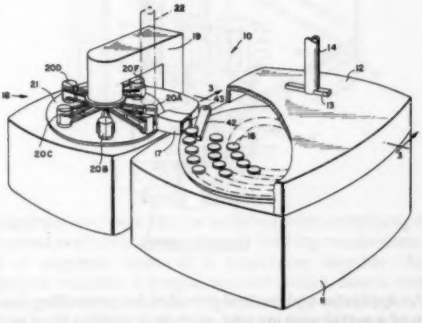
A method and a system for carbonating a liquid product. The improved method attainable with the instant system provides a multi-stage carbonation procedure which achieves more accurate and more dependable control of the degree of carbonation of the final product. A primary carbonation process is utilized to pre-carbonate the liquid product prior to a final carbonating procedure which is capable of providing a uniformly carbonated, stable product. The primary carbonating step is effective to pre-condition the product prior to the secondary carbonating procedure, such that control of the end product may be achieved by adjustment in the primary carbonation process. The primary and secondary carbonation processes are isolated, one from the other, such that primary carbonation may take place at substantially constant pressure, unaffected by any pressure variations that might occur in the secondary treatment.

3,741,553

METHOD AND APPARATUS FOR FORMING CONTAINERS BY BLOW-MOLDING

Lawrence A. Moore, King of Prussia, Pa., assignor to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 52,812, July 7, 1970, Pat. No. 3,661,489.
This application Nov. 26, 1971, Ser. No. 202,699
Int. Cl. F27b *9/16*
U.S. Cl. 432—11 **9 Claims**



Preforms preferably of a suitable plastic material, are heated and then placed into a container mold where they are

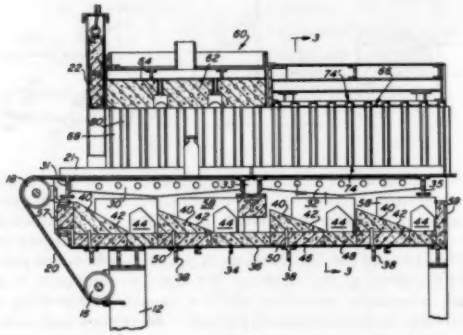
formed into containers. The applicable heating oven depends on the shape of the preform when it is heated. A rotary oven with an outwardly spiralling path may be used for flat or partially preshaped preforms. An elongated oven may be used for heating an elongated strip, from which flat preforms are cut after heating. The container mold assembly is constituted by a plurality of individual molds, all rotatable together about an axis of the container mold assembly, the individual molds arriving successively at a loading station for receiving heated preforms.

3,741,554

LEHR HEATING SECTION

Willard Clark, Farmland, Ind., assignor to Maul Bros., Inc., Milville, N.J.

Filed May 17, 1971, Ser. No. 144,184
Int. Cl. F27b 9/24
U.S. Cl. 432—146 **9 Claims**



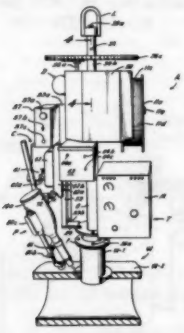
A lehr heating section for heat treating glass is disclosed. The tunnel walls have an irregular surface to cause turbulence in air convection currents and to provide for heat expansion. The burner section uses refractory blocks orientated by pins and recesses so as to avoid the use of mortar.

3,741,555

CONTROL APPARATUS AND METHOD FOR METALWORKING TOOLS

Vernon H. Roesel, Route No. 1-Box 131M, Cypress, Tex.

Filed Dec. 22, 1970, Ser. No. 100,573
Int. Cl. B23k 7/04
U.S. Cl. 266—23 M **10 Claims**



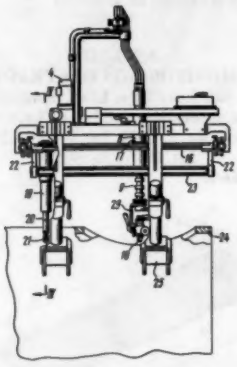
An apparatus and method provided for controlling the position of a metal working tool, such as a welding head or torch or a cutting head or torch, with respect to the work pieces being joined or separated by the metal working tool.

3,741,556

DEVICE FOR CUTTING OUT ROUND HOLES IN CYLINDRICAL AND OVAL PARTS AND STRUCTURES

Alexandr Ilich Remennikov, prospekt Lenia, 179, kv. 114; Viktor Mikhailovich Vasiliev, ulitsa Myasnikova 12, kv. 73, both of Volgograd, and Robert Ashotovich Shiganov, ulitsa Uzeir Gadzhibekov 66, kv. 6, Baku, all of U.S.S.R.

Filed July 9, 1971, Ser. No. 161,095
Int. Cl. B23k 7/04
U.S. Cl. 266—23 N **1 Claim**



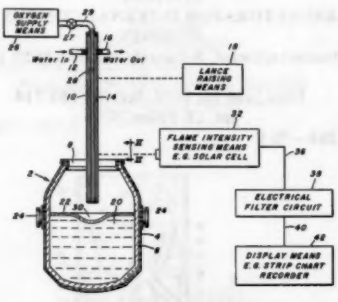
The rod carrying the cutter moves vertically in the device in accordance with the vertical motions of the bar of the appliance which profiles the surface machined by the cutter because said rod and bar are kinematically linked by a splined rod.

3,741,557

APPARATUS FOR CONTROL OF CARBON CONTENT IN STEEL PRODUCED IN BASIC OXYGEN FURNACE PROCESS

Samuel S. Harbaugh, Natrona Heights, and Perry M. Rockwell, Glenshaw, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Brackenridge, Pa.

Continuation of Ser. No. 689,127, Dec. 8, 1967, abandoned. This application Aug. 13, 1970, Ser. No. 63,650
Int. Cl. C21c 5/32
U.S. Cl. 266—35 **7 Claims**



This patent discloses an improvement in a basic oxygen furnace steelmaking process in accordance with which steel of desired carbon content is produced by observing the intensity of the flame at the mouth of the steelmaking vessel and controlling the supply of oxygen to the vessel in accordance with the above-mentioned observations. The control action taken as a result of the observations may be quite simple, e.g., ter-

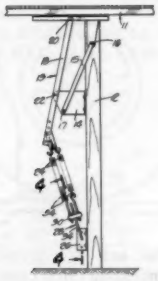
mination of oxygen supply, or somewhat more complex, e.g., adjustment of lance position or oxygen-supply rate. As desired or needed, equipment of greater sophistication such as digital-computer means may be used to analyze the observations and determine the time of taking the necessary control action.

3,741,558

DEVICE FOR SECURING AND TENSIONING COILED SPRINGS

John Ochs, 2923 Yerrling Street, Lakewood, Calif.

Filed Oct. 26, 1971, Ser. No. 192,444
Int. Cl. F16f *1/26*
U.S. Cl. 267—73 **4 Claims**



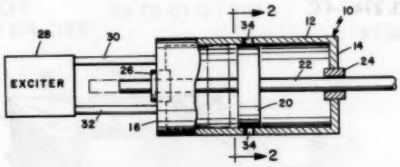
A device for securing and tensioning garage door springs in place including a cross-bar member, a downwardly extending rod threadably connected at one end to the cross-bar member and having a hook at the other end adapted to engage an anchor bracket, a pair of spaced upwardly extending threaded rods which protrude through apertures in the cross-bar and have hooked upper ends adapted to be connected to the springs, and nuts on each of the lower ends of said threaded rods adapted to engage the lower face of the cross-bar so that the threaded rods may be axially adjusted relative to the cross-bar.

3,741,559

OSCILLATORY MOTION COUPLER

Frederick W. Ross, 755 Klamath Drive, Del Mar, Calif.

Filed Dec. 7, 1970, Ser. No. 95,525
Int. Cl. F16f *9/18*
U.S. Cl. 267—124 **22 Claims**



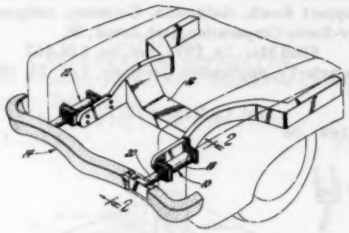
A oscillatory motion coupler which when excited in oscillation transfers oscillatory motion induced in a cylinder to a piston free to oscillate within that cylinder. When excited at the natural frequency of the coupler the oscillatory motion can be amplified. The piston includes a piston rod to transfer the force on said piston to the exterior of the cylinder. Associated with the cylinder are passive pneumatic passages which offset the natural tendency of the piston oscillation center to move from its original location to one end of the cylinder or the other. The passages maintain the center of oscillation within the confines of the cylinders so as to prevent impact of the piston against either end thereof.

3,741,560

DAMPENED SHOCK ABSORBING BUMPER

Albert L. Schaller, Clarkston, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 1, 1971, Ser. No. 176,830
Int. Cl. B60r *19/02*; B61f *19/04*; F16f *7/08*
U.S. Cl. 267—134 **3 Claims**



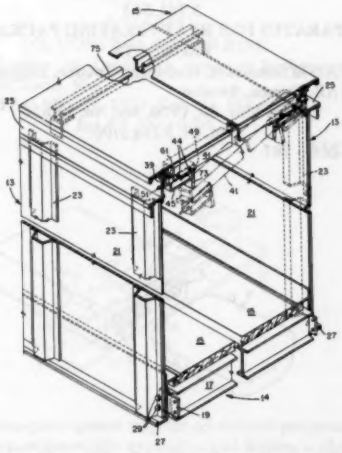
An impact energy absorbing device includes a cylinder, a generally cup-shaped friction shoe slidable in the cylinder, a ram received in one end of the cylinder and having a bullet-shaped nose which is slidably received in the cup-shaped friction shoe, an elastomeric material filling a space between the bullet-shaped nose and the friction shoe, and spring means acting between the friction shoe and the other end of the cylinder to yieldably resist telescoping movement of the ram and friction shoe into the cylinder upon application of impact force thereto so that the friction shoe is radially expanded against the cylinder by radial displacement of the elastomeric material.

3,741,561

ROOF BOW APPARATUS

Robert B. Reidenbach, Exton, Pa., assignor to Gindy Manufacturing Corporation, Downingtown, Pa.

Filed July 7, 1971, Ser. No. 160,389
Int. Cl. B25b *5/16*
U.S. Cl. 269—43 **4 Claims**



Temporary roof bow apparatus for a trailer comprising first and second resiliently actuatable pin latching mechanisms affixed at opposite ends of a transverse member. Each mechanism includes a tongue member which coacts with a groove portion of a longitudinally extending roof rail of an upstanding sidewall of the trailer. Spring biased latching pin means are engageable in longitudinally spaced apertures in the

side roof rail to retain the bow in place thereby positioning the opposed sidewalls of the trailer body in spaced relationship to one another. Upon pretacking a roof skin across the sidewalls at a next assembly station permanent roof bows of longer length are substituted for the temporary roof bows.

3,741,562

APPARATUS FOR THE OPERATION OF A TOOL

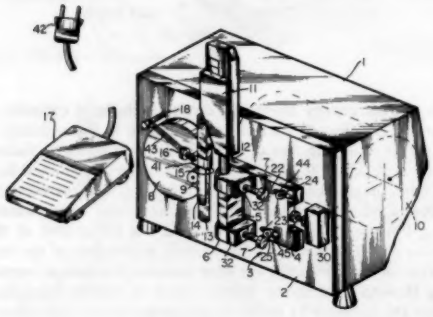
Alois Ruppert Resch, Heilbronn, Germany, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Mar. 26, 1971, Ser. No. 128,462

Claims priority, application Germany, Apr. 24, 1970, P 20 20 076.4

Int. Cl. B25b *1/18, 7/16*

U.S. Cl. 269—96 **5 Claims**



This invention relates to an apparatus for holding a tool and mechanically operating the tool. The apparatus comprises a clamp which holds the tool and which is adjustably mounted on a plate. The plate is adjustably mounted to the surface of a support frame. A thrust means is also mounted to the frame for applying thrust to a portion of the tool, the thrust means being controllable by a control means which may be in the form of a foot switch. Movement of the thrust means operates the tool.

3,741,563

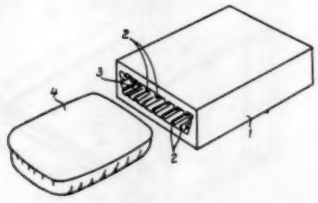
APPARATUS FOR HEAT TREATING PACKAGED PRODUCTS

Lennart Arvid Stenstrom, Huddinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Mar. 30, 1970, Ser. No. 23,620

Int. Cl. B23q *3/00*

U.S. Cl. 269—287 **6 Claims**



A product tightly enclosed in a flexible package is subjected to heat treatment in a heat-inducing field while supported by a device comprising a plurality of flanges closely spaced from each other and lying close to the package so as to prevent its destruction due to internal pressure increase during the heat treatment. The flanges are positioned to expose the package over a large part of its surface, so that such part is accessible to a cooling medium.

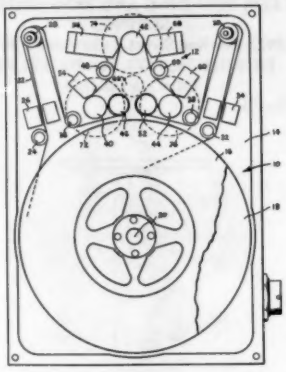
3,741,564

TRI-CAPSTAN TAPE TRANSPORT

Gordon Schulz, Tujunga, Calif., assignor to Odetics, Inc., Anaheim, Calif.

Continuation of Ser. No. 59,879, July 31, 1970, abandoned. This application Feb. 11, 1972, Ser. No. 225,507

U.S. Cl. 274—4 D **25 Claims**



A tape transport for use in a precision magnetic tape recorder/reproducer including three capstans with associated capstan pulleys driven by a single motor pulley. Bi-directional differential operation is achieved by providing a "hard" drive between the motor pulley and the capstan pulleys and by varying the diameter of the capstans so that the outer two capstans rotate at a higher peripheral velocity than the central capstan. In this manner, differential tension is created between the second and third capstans regardless of the direction of tape movement. The present tape transport further includes a plurality of idlers which control the path of the magnetic tape to achieve a cumulative wrap angle of more than 600° without any capstan contacting the oxide side of the magnetic tape. Such tape path further provides a plurality of tangent points for locating magnetic heads to improve tape-to-head compliance and stability.

3,741,565

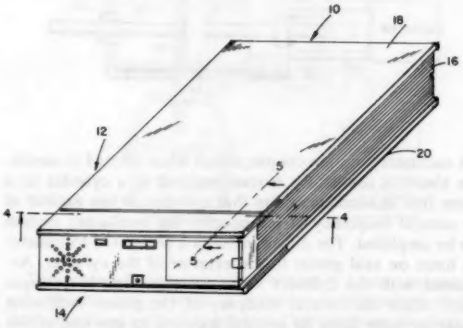
TALKING PHOTOGRAPH ALBUM

Julius Breitling, Bayside, and Bernard Pollack, Brooklyn, both of N.Y., assignors to Sight & Sound Wedding Albums, Ltd., Brooklyn, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,763

Int. Cl. G11b *5/00*

U.S. Cl. 274—4 C **9 Claims**



A photograph album in which a playing device housing for recorded material forms the means for holding individual pages provided with photographs, the pages being fastened to

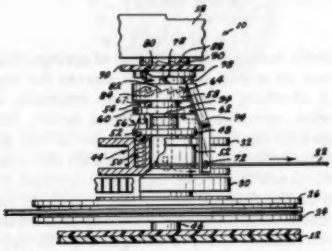
the housing to form a talking book. Support arms, extending from the playing device housing, provide support for the fastened individual pages. The pages are secured to the support arms by means of a fastening device which passes through each individual page and through the support arms and is locked in place. The support arms are disposed midway between the top and bottom of the playing device housing, so that the pages can be attached above and below the support arms, thereby minimizing the stresses placed on the individual pages when turning the pages.

3,741,566

SEQUENTIAL PHONOGRAPH TOY

William R. Baynes, Palos Verdes Peninsula, and Ake L. Larsson, Redondo Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 13, 1970, Ser. No. 89,216
Int. Cl. G11b *25/04*; A63h *3/33*
U.S. Cl. 274—9 R **4 Claims**



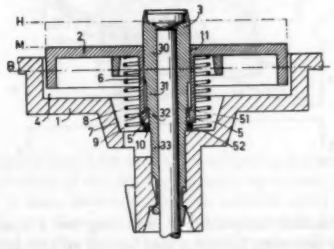
A phonograph having a record with several sayings which are played in sequence comprising a turntable that rotates in reverse when a cord is pulled to wind a spring motor. As the cord is pulled it pivots a crank that pushes a stop into the path of a turntable projection to stop the turntable, and thereby determine which groove will be next played. When the cord is released to allow the crank to return to its intial position, the crank ratchets the stop to a new position so that the next time the cord is pulled a new record groove will be played.

3,741,567

DEVICE FOR CENTERING DISC RECORDS ON THE TURNTABLE OF A RECORD PLAYER

Tadeck Valentin Bis, Les Landes, Saint Paul, Orne, France

Filed Oct. 27, 1971, Ser. No. 193,019
Claims priority, application France, Nov. 2, 1970, 7039409
Int. Cl. G11b *17/04*
U.S. Cl. 274—10 S **4 Claims**



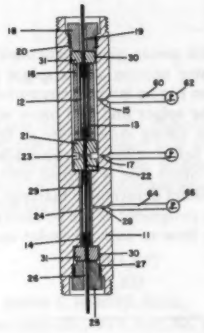
A device for centering disc records on a record player having a centering and ejection element which accommodates records having larger center holes and is displaceable over the central spindle which accommodates records with small center holes. The centering element is arranged to be recessed in the turntable against the force of a spring. Projections are provided for locking the centering element in the recessed position. The centering element can be unlocked by exerting pressure on it, with the result that the centering element is clamped around a ring movable over the spindle and is resiliently widened, so that during its return it is capable of passing over a collar on the central spindle, and the ring is arrested by this collar.

3,741,568

CABLE SEALING APPARATUS

Vaughan W. Rhoades, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.

Int. Cl. F16j *15/46*; F16r *41/00*
U.S. Cl. 277—34.6 **8 Claims**



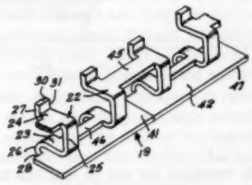
Disclosed herein is apparatus to be utilized in conjunction with a wellhead assembly consisting of a steel body accomodating a Hassler type sealing sleeve. The apparatus is utilized for sealing a cable which is extended within a wellbore containing fluids under pressure and is particularly applicable to the sealing of stranded cable which conventionally is most difficult to adequately seal, generally requiring large apparatus to accomplish the seal.

3,741,569

OIL CONTROL PISTON RING

Donald J. Mayhew, St. Louis, Mo., assignor to Ramsey Corporation, St. Louis, Mo.

Filed May 27, 1971, Ser. No. 147,423
Int. Cl. F16j *9/00*
U.S. Cl. 277—140 **13 Claims**

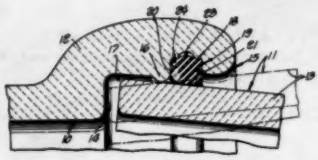


A one or two-piece piston ring for oil control purposes, the ring being circumferentially expansive and having a plurality of axially centrally located U-shaped cross section legs connecting the axially top and bottom portions of the ring, the U-shaped cross section legs being alternatively connected to adjacent legs by circumferential bars at either the top or the bottom of the "U", the "U" opening inwardly, and the bars being dimensioned to provide the circumferential spring thrust for the ring independent of the cylinder contacting portions of the ring.

3,741,570
FLEXIBLE JOINT FOR SEWER PIPE

Ben B. Garrett, 13747 E. Philadelphia Street, Whittier, Calif.

Filed Nov. 16, 1970, Ser. No. 89,845
Int. Cl. F16j 15/10, 15/32
U.S. Cl. 277—207 8 Claims

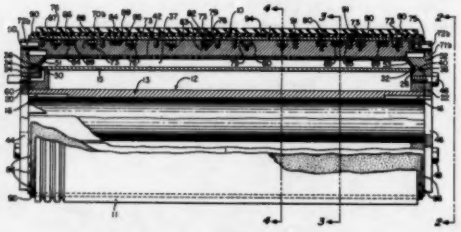


A flexible joint for sewer pipe, particularly clay pipe, for connecting a bell pipe section and a spigot pipe section, in which the bell section has an internal circumferential rib forming a support for the spigot end and upon which it may fulcrum during relative tilting movements of the sections. The inner surface of the bell is relieved on one side of the supporting rib, and on the other side is formed with a groove for a sealing gasket of resilient deformable material, such as rubber, the groove having a peripheral space or cavity into which the gasket material can flow or expand under operating applied compression forces.

3,741,571
EXPANDING MANDREL

Wayne A. Prazak, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 86,019, Nov. 2, 1970, abandoned. This application Sept. 15, 1971, Ser. No. 180,671
Int. Cl. B23b 31/40
U.S. Cl. 279—2 9 Claims



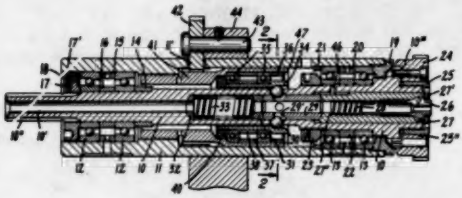
An expandable mandrel for use in manufacturing V belts, said mandrel having an inflatable expandable diaphragm, rigid axially extending segments disposed about the diaphragm, stop means surrounding the segments to limit the radially outer movement of the segments, coil springs disposed about the segments to contract the mandrel, and caps mounted on the radially outer sides of the segments to collectively provide a cylindrical surface.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,741,572
QUILL SPINDLE

Kenji Nemoto, Tokyo, and Fumihiro Ozawa, Matsudo, both of Japan, assignors to Seiko Seiki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1971, Ser. No. 210,900
Claims priority, application Japan, Dec. 26, 1970, 45/118920
Int. Cl. B23b 31/20, 31/26
U.S. Cl. 279—50 13 Claims

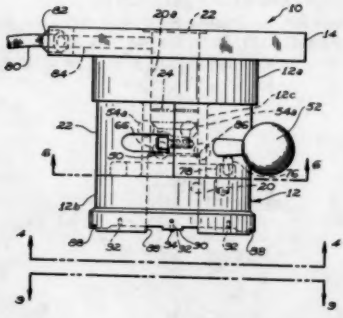


A quill spindle having a chuck, a pair of springs producing a resultant force on a pair of internal sleeves for urging the chuck into a chucking position, and an internally slideable coupling device, operable by an external device, for sliding one of the sleeves against the force of one of the springs to permit the other spring to automatically slide the other sleeve away from the chuck to remove the chucking force. A cap nut is connected to the forward end of the spindle to provide a stop for the chuck, and a flange is provided on the front of the spindle for circumferentially encompassing the cap nut to maintain the cap nut in accurate alignment. The coupling device includes a sleeve disposed within the quill for sliding movement in response to a force generated by the external device, for actuating a ball and eccentric socket mechanism coupled to one of the internal sleeves.

3,741,573
TOOL HOLDER FOR A MACHINE TOOL OR THE LIKE

Steven J. Treer, 5271 Spencer Road, Lyndhurst, Ohio

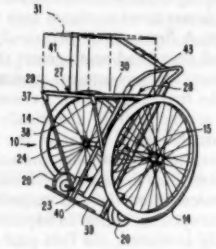
Filed July 12, 1971, Ser. No. 161,507
Int. Cl. B23b 31/10; B23k 9/16
U.S. Cl. 279—81 14 Claims



A tool holder adapted for mounting on a machine, for removably retaining therein a tool having an elongated shank. The holder has gripping means for gripping the tool shank and securely holding it in predetermined position in the holder, and eject means adapted for coaction with the tool shank for ejecting the tool from the holder upon release of the gripping means. A cam is movably mounted on the holder body for actuating and deactuating the gripping means and the ejecting

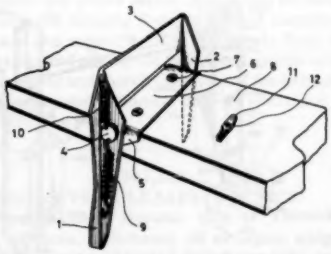
means respectively, depending upon the selected movement of the cam. Means are also provided for precisely locating the tool with respect to the holder, for indexing the tool to a predetermined position with respect to the holder, and for supplying fluid to the tool via the tool receiving passage in the holder.

3,741,574
CART FOR TRANSPORTING TELEVISION SET
John M. Burrow, Jr., 307 N. Main Street, Lafayette, Ga.
Filed Dec. 30, 1971, Ser. No. 214,184
Int. Cl. B60p *3/22*
U.S. Cl. 280—5.32 **2 Claims**



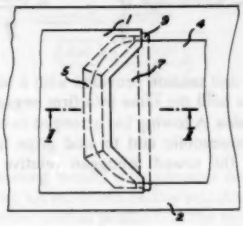
A cart supports a television set for moving up and down steps. To move up steps, a pair of wheels of relatively small diameter is placed on a first step and then a pair of wheels of large diameter is moved onto the same step by pivoting the frame of the cart about the axle of the pair of smaller wheels. After the larger pair of wheels rests on the first step, the frame of the cart is then pivoted about the axle of the larger pair of wheels to advance the smaller set of wheels to the next step. To move down steps, the opposite procedure is employed. The axle of the smaller pair of wheels is disposed from the axle of the larger pair of wheels a distance substantially equal to the radius of each of the larger pair of wheels.

3,741,575
AUTOMATIC BRAKE FOR SKIS
Ettore Bortoli, 6, Via Calabria, Thiene, Vicenza, Italy
Filed May 17, 1971, Ser. No. 144,150
Claims priority, application Italy, May 26, 1970, 85577 A/70
Int. Cl. A63c *7/10*
U.S. Cl. 280—11.13 B **3 Claims**



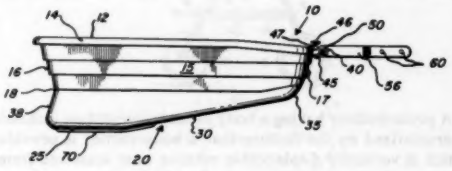
An automatic brake for skis has a mounting for securing on the upper surface of the ski, for example by screws. A stirrup comprises a cross-member and two parallel arms disposed respectively one at each end of the cross-member. The stirrup is connected to the mounting by pivot means which permit movement of the stirrup about an axis parallel to the cross-member. Spring-loading is coupled to the mounting and to the stirrup to urge the stirrup into a first end position in which the parallel arms are normal to the plane of the mounting. The stirrup can be held in another end position, with the arms parallel to the ski, by the user's foot.

3,741,576
SKI BINDINGS
Georges Pierre Joseph Salomon, Avenue de Loverchy, Annecy, France
Filed Apr. 30, 1971, Ser. No. 139,115
Claims priority, application France, May 5, 1970, 7016366
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 H **8 Claims**



A ski binding jaw fixed on a ski comprises a recess for centrally holding an end of a ski-boot sole above the ski. One of the recess and sole comprises an inclined surface, and the other of the recess and sole comprises an edge adapted to abut and wedge against the inclined surface.

3,741,577
SLED
Steven L. Rude, Route 1, Bemidji, Mich.
Filed Jan. 25, 1971, Ser. No. 109,171
Int. Cl. B62b *13/04*
U.S. Cl. 280—18 **3 Claims**

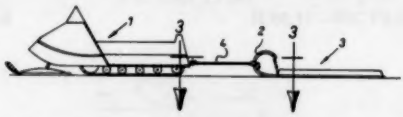


A snowmobile sled formed as a single one piece molded sled design having a generally rectangular open top, inwardly tapered or inclined sides and a bottom having a straight portion and an inclined portion leading toward the front of the sled. The molded design includes a semi-circular flange in which is positioned a single axis hitch in the form of a tubular member with a journalled rod therein, the rod carrying arms at the extremities of the same which are adapted to attach to the sides of a snowmobile such that the sled will be mounted with the top generally horizontal. The hitch is removably coupled to the sled by means of J shaped flange members which project around a portion of the sled at the top of the same and around the cylindrical member to retain the same on the sled.

3,741,578
HITCHING ATTACHMENT FOR A SNOWMOBILE
Roger Dumont, Thetford Mines, Quebec, Canada, assignor to Louis M. Bernard, Quebec, Canada
Filed June 18, 1971, Ser. No. 154,535
Int. Cl. B62b *13/00*
U.S. Cl. 280—24 **2 Claims**

A hitching attachment to be fixed to a snowmobile and arranged to tow a sled and, more particularly, a tobaggan. A hitching attachment having a pair of grips arranged to engage the opposite lateral sides of the curved front portion of a

toboggan and arranged to be displaced relative to one another to grip toboggans of different widths. The grips are slidably mounted for transverse displacement to allow lateral shifting of the sled or toboggan and a spring engages the grips to bias the toboggan towards a neutral position. A tying line of adjustable length and tension provided with a toggle clasp joins the two grips to hold the same into firm engagement with the above lateral sides. A towing bar arranged to be pivotally connected to a snowmobile and to said grips to allow various movements of the towed toboggan relative to the towing snowmobile.



3,741,579

PERAMBULATOR

Ernst-Guenter Kirsch, In den Poelten 5, 3472 Beverungen, Weser, Germany

Filed Dec. 4, 1970, Ser. No. 95,066

Claims priority, application Germany, July 4, 1970, P 20 33 184.4

Int. Cl. B62b *11/00*

U.S. Cl. 280—47.38 **17 Claims**

A perambulator having a body or seat mounted on a chassis, characterized by the feature that a body carrier is provided which is vertically displaceable relative to at least one frame part carrying at least one wheel and a spring member of resilient material located between the body and the upper end region of the frame part.

3,741,580

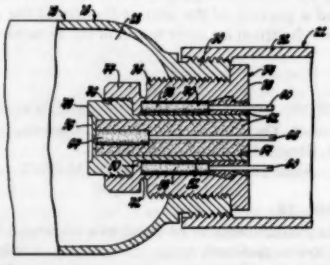
OCCUPANT RESTRAINT SYSTEM

Thomas H. Vos, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1971, Ser. No. 175,661

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **4 Claims**



A vehicle body occupant restraint system includes a source of pressure fluid, such as a pressure vessel of stored gas or a gas generator, an inflatable occupant restraint cushion, and a passage communicating with the cushion. The passage is communicated with the source by a first plug having an internal cylindrical bore opening at one end to the source and being of at least the same cross sectional area as the passage to provide unrestricted flow from the source to the cushion through the plug bore and passage. A radially inwardly extending web or flange at the other end of the bore and an adjacent rupturable flange join the plug to an internally threaded plug head. An externally threaded head of a second plug is received within the head of the first plug. The second plug head includes an internal cylindrical bore which opens at one end to the passage across an explosively rupturable diaphragm. The other end of the bore opens to a hollow cylindrical extension which extends through the first plug to the source. The second plug bore and extension are of lesser cross sectional area than the first plug bore and passage. A first pair of electrically fired detonators within the second plug head seat against the diaphragm and are located in place by conventional stemming material. The space between the first plug and the extension of the second plug receives a second pair of electrically fired detonators which seat against the radial flange of the first plug and are located by conventional stemming material. The pairs of detonators are connected in parallel with each other and in series across a source of power and respective impact force responsive control systems. When an impact of predetermined low level intensity is sensed, the first pair of detonators are fired to remove the diaphragm and release the pressure fluid for flow through the extension and head of the second plug to the passage and to the cushion to inflate the cushion. The rate of flow of the pressure fluid is reduced since the bore and extension of the second plug are of lesser cross sectional area than that of the passage. This increases the inflation time of the cushion. When an impact of predetermined higher level intensity is sensed, the second pair of detonators are additionally fired to rupture the flange and remove the second plug and plug head from the first plug to permit unrestricted flow of pressure fluid to the cushion at the normal rate. The pairs of detonators may also be sequentially fired at the lower pulse level.

3,741,581

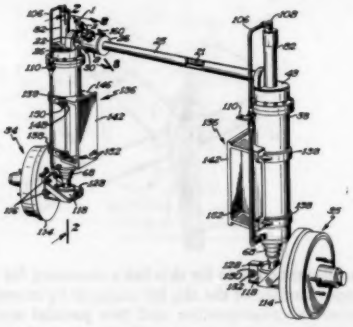
SUSPENSION AND STEERING APPARATUS FOR VEHICLES

Arthur J. Patrin, Frederic, Wis., assignor to David W. Florence and Helen Patrin, Frederic, Wis., a part interest to each

Filed May 21, 1970, Ser. No. 39,481

Int. Cl. B60g *3/00, 11/14*

U.S. Cl. 280—96.2 R **14 Claims**



A vertically disposed spindle shaft rotatably supported within a hydraulic cylinder is utilized to transmit turning movements to the wheel of a vehicle by means of a gear train including a plurality of bevel gears driven by a bevel pinion on a vehicle steering column. A piston positioned transversely within the hydraulic cylinder on the aforesaid spindle shaft and vertically movable within the hydraulic cylinder with the

spindle shaft acts as a shock absorbing device and further serves as a support means for a main suspension coil spring contained within said cylinder, the spindle shaft being rotatably supported at the opposite ends of said cylinder as well as by said piston. Two different sets of flow passages in said piston of different cross-sectional areas cause said piston and spindle to move downwardly relative to said cylinder at a slower rate than they move upwardly to give the desired shock absorbing effect, and a valve controlled fluid conduit connecting the upper and lower ends of said hydraulic cylinder on opposite sides of said piston permits the adjustment of the shock absorber device to give the desired performance for a particular vehicle size and weight load. A threaded yoke connection of the aforesaid spindle shaft to a wheel hub permits the rotary adjustment of the wheel on the spindle for proper toe-in and wheel alignment, and final wheel alignment of both front wheels relative to a vehicle is accomplished by the rotatably adjustable mounting of the aforesaid hydraulic cylinder on a mounting block utilized for attaching the hydraulic cylinder to a vehicle frame.

3,741,582

SUSPENSION SYSTEM FOR A CAR

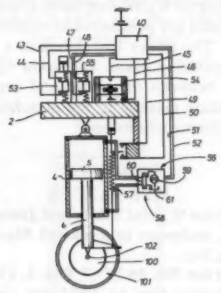
Konrad Eckert, Stuttgart-Bad Cannstatt, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 26, 1971, Ser. No. 137,352

Claims priority, application Germany, Apr. 25, 1970, P 20 20 292.0

Int. Cl. B60g *17/04*

U.S. Cl. 280—124 F **11 Claims**



A suspension system for supporting the body of a motor car includes cylinder and piston means connecting the body with the wheel shafts and forming first and second chambers connected with first and second sources of pressure fluid. A regulating valve varies and adjusts the flow cross section of the first and second conduits and thereby the flow of the pressure fluid into the first and second chambers until no resonance oscillations of the body take place.

3,741,583

MOTOR VEHICLE SAFETY DEVICE

Keizaburo Usui; Takashi Haruna, both of Yokosuka, and Yoshinori Akiyama, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

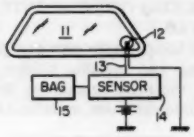
Filed June 15, 1971, Ser. No. 153,180

Claims priority, application Japan, June 25, 1970, 45/63362; Nov. 7, 1970, 45/98036

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **8 Claims**

Herein disclosed is a safety device for protecting a vehicle occupant from injury during a collision of a motor vehicle. The safety device uses an inflatable protector bag which is normally stowed in a contracted condition and which is expanded and projected to a protective condition intervening between the vehicle occupant and surrounding structural parts of the vehicle cabin when an impact resulting from the collision is detected. The safety device also uses a blasting means which is adapted to destroy or release a window pane of any of the front windshield, side door windows and a rear window immediately when the inflatable protector bag is expanded. The blasting means thus protects the vehicle occupant from hurting his eardrums and/or intestines due to a sudden rise in the atmospheric pressure in the vehicle cabin. The blasting means will also facilitate the vehicle occupant to get out of the vehicle cabin through the broken windows in the event of the collision.



3,741,584

DEVICE FOR INFLATING A SAFETY BAG FOR VEHICLE PASSENGERS

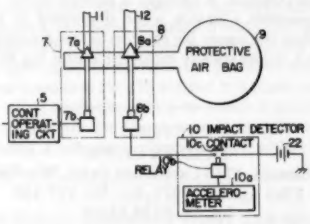
Hiroshi Arai, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Apr. 8, 1971, Ser. No. 132,274

Claims priority, application Japan, Dec. 1, 1970, 45/105455

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **5 Claims**



A device for inflating a safety bag which forms a protective cushion in a vehicle for passengers includes a compressed air source which is connected to the protective air bag through two separate connecting lines. Each line is controlled by a valve which is operated either by a collision-sensing or crash detector. One of the detectors is set to operate the valve at a first condition in which a collision is sensed and it provides an inflation of a bag at a predetermined rate which is less than the passage flow rate through the second valve controlled passage. The second valve is controlled by a separate detector which is set to operate at a higher value or at a distinct collision-sensing condition, for example, at the condition of actual impact, or after a predetermined first collision condition has been achieved. The collision conditions are measured, for example, by accelerometers. The arrangement is such that both flow passages, or at least one flow passage, will provide for an air connection to the bag to provide rapid inflation of the bag to protect the passenger as necessary.

3,741,585
LOW TEMPERATURE NITROGEN GAS GENERATING COMPOSITION

Roger R. Hendrickson, Bear River City; William O. Munson; Russell Reed, both of Brigham City, and Graham C. Shaw, Garland, all of Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

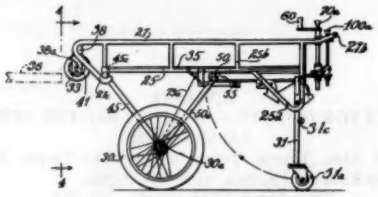
Filed June 29, 1971, Ser. No. 158,108
Int. Cl. F16p 1/00; B60r 21/10, 21/08
U.S. Cl. 280—150 AB **39 Claims**

A relatively low temperature nitrogen gas generating composition containing (A) metallic azides and (B) reactants therefor, such as, the metallic sulfides, metallic iodides, organic iodides, organic chlorides, metallic oxides and sulfur.

3,741,586
FOLDABLE REAR SUPPORTS FOR HAND-PROPELLED CARTS

Max Wiczer, 6400 West Gross Point, Niles, Ill.

Continuation-in-part of Ser. No. 68,721, Sept. 1, 1970, Pat. No. 3,687,475. This application Dec. 17, 1971, Ser. No. 209,096
Int. Cl. B60s 9/02
U.S. Cl. 280—150.5 **3 Claims**

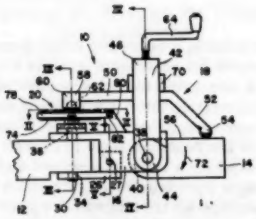


A hand-propelled cart with side wheels, and a rear caster leg foldable under the frame of the cart. The caster leg is freely pivoted and actuated by means of a hand lever to fold, a camming latch operating automatically to lock the caster leg in the folded position. A plunger is located in the rear of the cart, and operates a device when depressed to release the latch and allow the caster leg to drop to standing position; and another latch automatically locks the caster leg in such position.

3,741,587
TRAILER HITCH

Ernest R. Wilaman, 1746 Larchmont Drive, Warren, Ohio

Filed Apr. 26, 1971, Ser. No. 137,259
Int. Cl. B62d 53/00
U.S. Cl. 280—406 A **16 Claims**

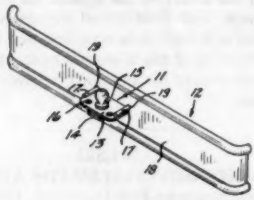


A hitch assembly for connecting a trailer vehicle to tractor vehicle. A draw bar is securely attached to the tractor vehicle frame and projects rearwardly from the vehicle. The rear end of this bar is connected to a coupling member by a vertical pin. The coupling member is also connected to the trailer vehicle tongue by a horizontally extending pin. Movement about the horizontal pin is limited by a restraining bar connected to the trailer vehicle tongue and extending above the coupling member where it is confined within a yoke carried by the coupling member.

3,741,588
TRAILER HITCH

William E. Dotterweich, East Lansing, Mich., assignor to Foote Products, Valley Tow-Rite Division, The Scot and Fetzer Company, Lansing, Mich.

Filed Feb. 14, 1972, Ser. No. 226,122
Int. Cl. B60d 1/06
U.S. Cl. 280—491 E **5 Claims**

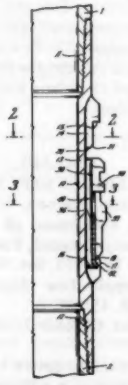


A trailer hitch comprising a pair of parallel horizontal plates, each having curvilinear projections therefrom and the projections penetrating selected openings provided in an attachment surface, such as a vehicle bumper or extension from the frame, transverse to the horizontal plates. The projections are tilted into the openings to bear on the opposite side of the web of the bumper or frame extension from the plates. Thus the horizontal plates are positioned in relative parallel spaced registry relation. The trailer ball serves as a stud and extends through both registering plates and upon tightening partially closes the space between the plates and secures the hitch in compression relation relative to the attachment surface such as the bumper or frame extension.

3,741,589
PIPE HANGER

David P. Herd; John W. McCaskill, and James V. Bonds, all of Houston, Tex., assignors to Rockwell Manufacturing Company, Houston, Tex.

Continuation of Ser. No. 862,887, Oct. 1, 1969, abandoned. This application Nov. 11, 1971, Ser. No. 198,000
Int. Cl. F16l 35/00
U.S. Cl. 285—3 **22 Claims**



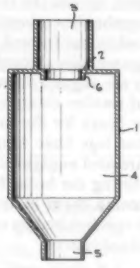
A hanger for suspending a pipe string within a well comprising: a tubular body member and a support ring mounted around the body member for axial movement thereon. The

body member may be adapted for connection at its upper end to a handling string and at its lower end to the pipe string to be suspended. The body member may be provided with a reduced outside diameter mid-portion and a larger diameter backup portion with stop shoulders at the upper end of the back-up portion and upper end of the mid-portion. The support ring may be axially split along one side so as to be contractable from its unrestrained position and self-expandable from the contracted position to its unrestrained position. The hanger is provided with a release arrangement for holding the ring around the body member mid-portion but being disengageable to allow the ring to move upwardly relative to the body member and around the back-up portion thereof in its unrestrained position until it contacts the stop shoulder at the upper end of the back-up portion. In this position the backup portion locks the ring in its unrestrained position and prevents downward movement of the body member relative to the support ring. In one embodiment the release arrangement is disengageable on contraction of the ring. In another embodiment the release arrangement initially holds the ring around the mid-portion in a collapsed condition. On disengagement the release allows the ring to expand to its unrestrained position for movement to the locked position around the back-up portion.

3,741,590
PIPE SECTIONS

Gerardo Antonio Zuardi, Rua Henrique Lacombe 270, Ilha do Governador, Rio De Janeiro, Estado da Guanabara, Brazil

Filed July 2, 1971, Ser. No. 159,243
Int. Cl. F16l *25/00*
U.S. Cl. 285—177 **6 Claims**



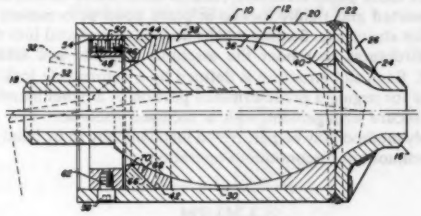
A pipe section for use in sanitary discharge down-piping having such a form as to prevent the growth on at least a part of its interior wall of a crust formed by repeated contact with said wall by sewage matter, whereby rodents cannot climb upwardly within said piping. The pipe section is provided intermediate its axially aligned inlet and outlet ends with an intermediate part of greater diameter which tapers or curves at its lower end to the diameter of the outlet.

3,741,591
BALL JOINT ASSEMBLY

Leroy E. Fessler, Roselle, and Wayne M. Davis, Highland Park, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 29, 1971, Ser. No. 213,692
Int. Cl. F16l *27/06*
U.S. Cl. 285—270 **12 Claims**

Compact ball joint assembly for piping system has ball and socket portions which may be formed of pipe. A reaction member held internally of the socket portion by retaining means such as a retaining ring or radially extending socket screws provides a support for a plurality of adjustment screws which can be moved in a direction parallel to the axis of the

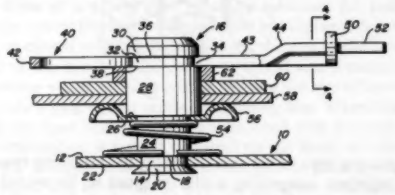


socket portion for forcing a pressure ring positioned for axial movement within the socket against a sealing ring which bears against the ball portion of the joint.

3,741,592
RETENTION DEVICE

Randall E. Muncy, Springfield, Ohio, assignor to Muncy Corporation, Enon, Ohio

Filed July 29, 1970, Ser. No. 59,203
Int. Cl. F16c *11/00*
U.S. Cl. 287—101 **7 Claims**

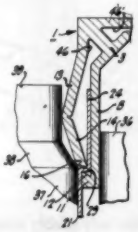


A retainer featuring a spring clip which in an unlatched condition has an elongate, modified "U" shape. At its open end the legs of the clip are spring formed to be biased from one another. Intermediate their ends the legs have mating bowed portions adapted to closely embrace a body portion of a stud or other shaft-like element while their projected extremities may be brought together and releasably latched under tension. In its latched condition the clip is fixed in a plane transverse to the stud or other shaft-like article to which it mounts to serve as a holding medium for elements mounted between it and means defining a reference plane through which the stud or shaft projects.

3,741,593
STRUCTURAL ASSEMBLY JOINT AND METHOD FORMING SAME

Andrew J. Toti, 311 W. River Road, Modesto, Calif.

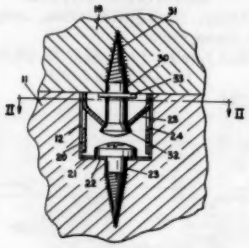
Filed Dec. 21, 1970, Ser. No. 100,189
Int. Cl. F16b *5/00*
U.S. Cl. 287—189.36 D **34 Claims**



A structural assembly comprised of at least two structural members interconnected with each other into a rigid assembly

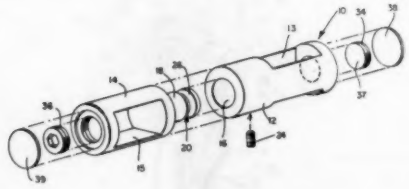
joint without requiring separate fastening means to effect interconnection. The assembly includes a deformable connecting member defining one or more slot structures into which one or more panel members, such as deformable sheets, may be inserted and rigidly locked in place upon deformation of the slot structures. Sealing means may be introduced into the slot structures to render the assembly airproof and waterproof. Each slot structure is defined by a deformable locking flange for urging a predetermined portion of a panel member into secure engagement with a recessed shoulder. The assembly method may be performed mechanically or by hand, in a continuous or discontinuous operation.

3,741,594
FASTENER ASSEMBLY
Edward J. Ostling, Muskegon, Mich., assignor to Modular Systems, Inc., Fruitport, Mich.
Filed Apr. 28, 1971, Ser. No. 138,132
Int. Cl. F16b *12/50*
U.S. Cl. 287—23 **5 Claims**



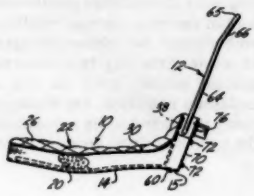
A plunger type of fastener assembly for attaching two members together comprising a clip adapted to be seated in an aperture in one of the members so as not to protrude above the surface thereof. The clip has a base, with means for securing the base to the bottom of the aperture, a wall element extending upwardly from the base so as to contact the side of the aperture, and a plurality of finger-like projections which are integral with an intermediate portion of the wall element and extend angularly therefrom in the direction of the base, the projections being adapted to receive and retain therebetween the head portion of a screw means, the shank portion of which is adapted to be embedded in the other of the members.

3,741,595
APPARATUS FOR ASSEMBLING POSTS AND RAILS
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Filed Feb. 25, 1972, Ser. No. 229,264
Int. Cl. F16b *7/00*; F16d *3/08, 1/00*; E04c *3/00*
U.S. Cl. 287—51 **9 Claims**



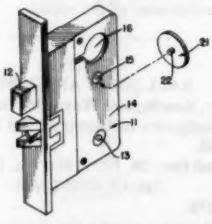
Handrails and posts are adjustably assembled by means of a rotatably adjustable pierced fitting having a general shape longest in a direction that is perpendicular to both the handrail and post at the same time. The fitting permits adjustment both for height and pitch and has separate means to allow the longitudinally extending posts and handrails to be slid to various positions and then fixed with respect to a portion of the fitting. Means are also disclosed for temporarily fixing the relative position of the posts, handrails and fitting pieces and then rotatably adjusting them, and then permanently fixing their position.

3,741,596
MOTORCYCLE SEAT
William D. Cate, 3715 Avalon Street, West Riverside, Calif.
Filed June 17, 1971, Ser. No. 154,026
Int. Cl. A47b *19/00*
U.S. Cl. 297—195 **9 Claims**



A motorcycle seat with built-in means for retaining a safety bar in position. The seat has a frame made up of a bottom plate and a sturdy cast aluminum back member. The bottom plate is contoured to provide good seating comfort for an operator and passenger, and the aluminum back member is mounted at the rear of the plate to serve as an upwardly extending and rearwardly sloping backstop for the seat. The back member is fastened to the bottom plate by means of a metal tie strap bent sharply to extend along the top of the plate and then upwardly, flush against the forward face of the back member. The back member has receptive bores for the lower ends of the legs of a safety bar formed from a doubled length of metal rod. Running upwardly through the bottom plate and into the back member are aligned openings for a pair of bolts. These openings are of smaller diameter than, and positioned in alignment with, the bores for the safety bar legs. The bottoms of the safety bar legs have tapped holes designed to receive the bolts in threaded engagement and the safety bar is fastened in place by fitting the bolts through the openings in the plate, then tightening them in the tapped holes in the safety bar legs. The seat is finished by covering the frame with a suitable padding and upholstery.

3,741,597
PROTECTIVE GUARD FOR A MORTISE TYPE LOCK
Richard J. Ohno, Branford, Conn., assignor to Sargent and Company, New Haven, Conn.
Filed Nov. 16, 1971, Ser. No. 199,271
Int. Cl. E05b *15/16*
U.S. Cl. 292—1 **3 Claims**



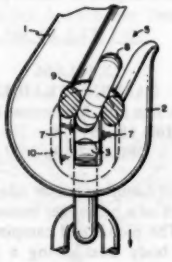
A protective guard is disclosed for a mortise lock having a spindle hole comprising a disc of hardened metal. Located

centrally with respect to one side of the disc is a stub extending perpendicularly therefrom. The stub terminates in a radially extending flange. A bushing is positioned over the stub between the disc and the flange whereby the flange retains the bushing. The stub with its bushing is adapted to be friction fitted into the spindle hole of the lock. The disc and stub may be rotated but the bushing remains stationary. The protective guard prevents access to the spindle hole.

3,741,598
PNEUMATIC BUMPER
Andrew Novak, 3030 West Ridgeway; Lawrence L. Novak, 2201 Welch Boulevard, both of Flint, Mich., and Mick Novak, 12248 W. Mount Morris Road, Flushing, Mich.
Filed June 21, 1971, Ser. No. 154,974
Int. Cl. B60r *19/10*; F16f *9/10*
U.S. Cl. 293—71 P **4 Claims**

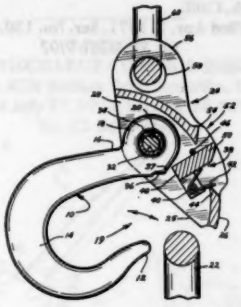
An inflatable bumper for a vehicle which includes an elongated frame having an upper and a lower projecting lip and an inflatable tube of substantially "H" cross-sectional configuration including forward and rearward air chambers. The opposing lips of the frame extend between the chambers to hold the tube in place. An alternate embodiment includes a plurality of accordion-like lateral folds across the upper and lower surface of the front chamber to facilitate its resilient compression under collision conditions.

3,741,599
GRAB HOOK
Walker E. Drayton, York, Pa., assignor to American Chain & Cable Company Inc., New York, N.Y.
Filed June 30, 1970, Ser. No. 51,069
Int. Cl. B64d *17/38*
U.S. Cl. 294—82 **17 Claims**



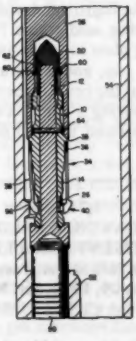
An improved grab hook for use with a chain, the grab hook having seating surfaces for suspending the link of the chain disposed within the throat of the hook in spaced relation with respect to the hook.

3,741,600
SAFETY HOOK
Edward J. Crook, Jr., Fort Wayne, Ind., assignor to American Hoist & Derrick Company, St. Paul, Minn.
Filed July 30, 1971, Ser. No. 167,371
Int. Cl. B66c *1/36*
U.S. Cl. 294—82 R **4 Claims**



A hoisting hook carries an end loop of a load bearing line and has an eye, a curved hook with a hook tip spaced from the eye to form a throat therebetween, and a throat closure device in the form of a safety gate pivotally mounted for rotation about the eye of the hook. The gate has a bridging arm portion which, in closed relation, extends from the eye of the hook to the top of the hook across the hook throat and a connecting arm portion which extends upwardly from the eye of the hook to provide a gate eye to receive a hoisting line. When the end loop of the load bearing line is on the hook and the hook and gate combination is loaded, the load on the hook will tend to cause the bridging arm portion of the gate to close on the tip of the hook and to remain in a closed position. A self-locking latch is pivotally mounted entirely within the gate for movement between locking and release positions. The configuration of the bridging arm portion is such that it is extremely unlikely or impossible for the load line end loop to move off of encircling relation to the hook whether the load line is slack or loaded and when the hook is bridged. The safety gate can be rotated clear of the hook throat to provide virtually the entire throat dimension for receiving the edge of flat sheet or plate material or the like.

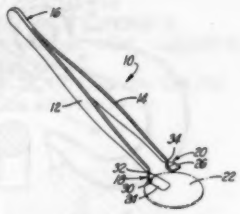
3,741,601
LATCH FOR GAS LIFT VALVE OR THE LIKE
William Aaron Dudley, Dallas, Tex., assignor to Teledyne Inc., Los Angeles, Calif.
Filed Aug. 27, 1971, Ser. No. 175,428
Int. Cl. E21b *31/02*
U.S. Cl. 294—86.18 **10 Claims**



A latch is disclosed which includes a central core, a sleeve

mounted to slide on the core and a collet mounted to slide on the sleeve. Positioning, locking and removal of the latch is effected by controlling the relative axial position of the central core, the sleeve and the collet.

3,741,602
TWEEZERS
Sidney W. Ploeckelmann, 905 Sepulveda Boulevard, Manhattan Beach, Calif.
Filed Apr. 1, 1971, Ser. No. 130,110
Int. Cl. B25b *9/02*
U.S. Cl. 294—99 R **4 Claims**



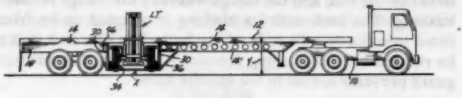
Tweezers for holding a fragile unit including two arm members having respective free ends movable upon the application of horizontal pressure from an open position of nonvertical alignment to a closed position of vertical alignment, the arm ends include gripping surfaces for engaging and securely holding the fragile unit at its periphery when the tweezers are in a closed position.

3,741,603
LOCKING PLATE FOR AXLE END CAP
Ralph M. McLean, Jr., 12100 Georgian Trail, Des Peres, Mo.
Filed June 9, 1971, Ser. No. 151,241
Int. Cl. B60b *35/02*; **F16b** *39/10*; **F16c** *35/04*
U.S. Cl. 295—36 R **8 Claims**

A locking plate for the axle end cap of railroad bearings in which the locking plate is provided with a central aperture for receiving a grease fitting, said grease fitting adapted to interlock with said locking plate to space and connect said locking plate to the axle end cap, and a plurality of cap screw head apertures spaced about the central aperture each having a plurality of sides for receiving a cap screw head, said cap screw apertures extending around the cap screw heads to prevent rotation thereof.

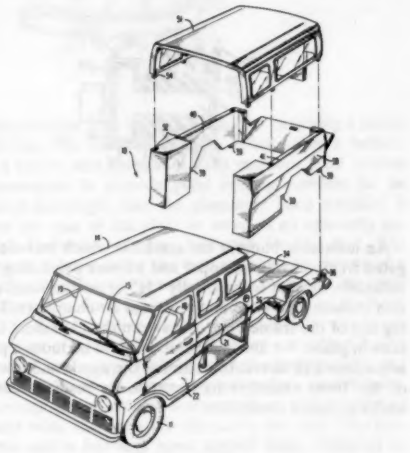
3,741,604
ROAD VEHICLE HAVING A BELOW-BED STORAGE COMPARTMENT FOR A LIFT TRUCK
John R. Heath, 3407 N. 26th Street, Tacoma, Wash.
Filed June 29, 1970, Ser. No. 50,829
Int. Cl. B60p *3/06*
U.S. Cl. 296—1 A **25 Claims**

A laterally extending, tunnel-like compartment is located below the cargo bed of a cargo truck. A low profile fork lift truck is fittable into this compartment. The edge of the cargo bed is recessed to provide a nook for receiving the lifting mast



of the lift truck. Ramps are provided so that the lift truck can be wheeled into and out from the compartment.

3,741,605
VEHICLE WITH DETACHABLE AUXILIARY PARTS
Hue R. Lee, 3390 Peachtree Road, Atlanta, Ga.
Filed May 20, 1971, Ser. No. 145,129
Int. Cl. B62d *33/08*
U.S. Cl. 296—10 **7 Claims**



A passenger vehicle having a passenger cab at its front portion over its steerable wheels with front and rear passenger seating areas. The passenger cab is displaced forwardly of the rear non-steerable wheels and includes a sliding back door to allow passengers to pass into and out of the passenger cab toward the rear of the vehicle. Various auxiliary vehicle attachments can be attached to and carried by the rear portion of the vehicle, including a camper house, pickup truck sides and an auxiliary passenger van. The passengers can enter the auxiliary parts of the vehicle from the passenger cab through the sliding backdoor.

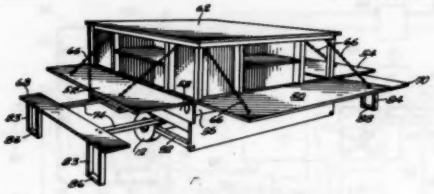
3,741,606
CAMPING TRAILER
John P. Grier, P.O. Box 505, Melbourne Beach, Fla.
Filed July 19, 1971, Ser. No. 151,230
Int. Cl. B60p *3/02*
U.S. Cl. 296—22 **9 Claims**

A picnicking and camping trailer adapted to be towed behind a vehicle such as a passenger automobile, pick-up truck or other vehicle. The picnic and camping trailer has a closed compartmentized body box having a plurality of separate compartments of varying sizes adapted to receive the various articles required for picnicking, camping or other recreational expeditions, such for example as a tent, bedrolls, cooking utensils, cold and normal temperature foods storage compartments, eating equipment, fishing and other sporting equipment, and all of the miscellaneous items or gear that are

required. The compartmentized body box has separate compartments of approximate sizes to separate the wet from the dry articles, and the rough articles such as tents from the food, cooking utensils etc.

The upper side, and preferably the back walls also of the camping and picnicking trailer are hinged along their bottom edges along horizontal axes to fold out and provide tables positioned at approximately 26 inches to 30 inches above ground level for the preparation and serving of food and for other purposes.

The lower side walls beneath the table forming walls are hingedly mounted on laterally movable guides extending transversely of the camping trailer, and are movable outwardly and may be turned from vertical positions closing the lower side openings of the camping and picnicking trailer to horizontal positions spaced laterally beyond the outer edges of



the upper side walls when in the horizontal table forming position to provide benches approximately 16 inches to 18 inches above ground level and extending along the sides of the table and positioned at comfortable distances beyond the outer edges of the tables when in the horizontal positions to facilitate eating at the tables.

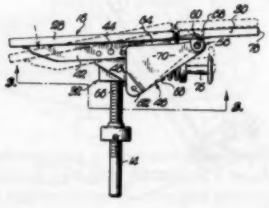
The bench forming members can be moved to the inner or travelling position and the upper table forming side walls can be hinged downwardly to the vertical position to permit ready access to the sides of the trailer to facilitate loading or unloading of the individual compartments of the body box.

The space on top of the camping trailer may be flat and may be used for many purposes such as sleeping, carrying of articles which for any reason cannot conveniently be positioned in any of the compartments, such for example as dead animals resulting from a hunt.

ERRATUM

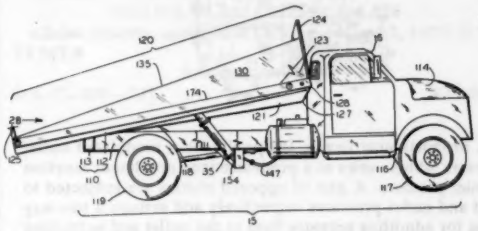
For Class 297—195 see:
Patent No. 3,741,596

3,741,607
CHAIR
Harold W. Cramer, 8419 Linden, Prairie Village, Kans.
Continuation-in-part of Ser. No. 826,819, May 22, 1969. This application Oct. 5, 1970, Ser. No. 77,816
Int. Cl. A47c *1/02*
U.S. Cl. 297—302 **4 Claims**



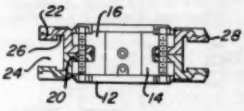
An office chair of the reclining type which is supported by the base and a standard, the chair having a back and a seat, the seat having a front portion and a rear portion, the rear portion of the seat being connected to the back, the front and rear portion of the seat being hingedly interconnected, there being a link interconnecting the rear portion with the front portion of the seat whereby, when the chair is reclined, the rear portion of the seat will assume an angular position and the front portion of the seat will retain its initially, substantially horizontal position to thereby maintain the user of the chair in a true posture position.

3,741,608
LOAD DISCHARGE CONTROL SYSTEM
William T. Webb, 4720 Buffalo Trail, Amarillo, Tex.
Filed July 27, 1970, Ser. No. 58,409
Int. Cl. B60p *1/16*
U.S. Cl. 298—17 S **3 Claims**



Automatic control assembly in hydraulic system for raising and lowering a loaded movable truck bed includes a floating valve and provides for selectively raising and emptying the heavier portion of the loaded truck bed and instantaneous control to provide an overall even discharge from the bed and level orientation of the load.

3,741,609
CUTTER BAR
Ralph W. Mitchell, P. O. Box 6115, Franklin, Pa.
Filed June 29, 1971, Ser. No. 157,940
Int. Cl. E21c *25/30*
U.S. Cl. 299—82 **9 Claims**



A cutter bar for a mineral cutting machine such as a coal cutter which bar is provided with a tapered body portion formed from a pair of oppositely facing elongated support channel members of U-shaped cross section secured and spaced apart in back toward back relationship by a plurality of spacer blocks rigidly secured therebetween and guideways formed of paired, channel-forming, one piece guide members of Z cross section having respective leg portions inserted in the support channels to form guideways of U-shaped cross section for a cutter chain having a link with leg portions to be inserted in the guideways and gibs on the ends of said leg portions to be received in gib raceways formed in the inside surfaces of the guide members adjacent to the bottom surfaces of the guideways.

3,741,610

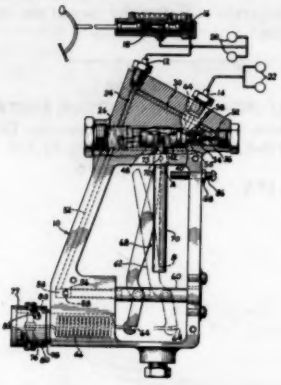
VARIABLE RATIO PROPORTIONING DEVICE

Harvison C. Holland, 230 22nd St., Santa Monica, Calif.

Filed July 13, 1970, Ser. No. 54,206

Int. Cl. B60t *8/26*

U.S. Cl. 303—6 C 13 Claims



A proportioning device for producing a modulated outlet pressure which varies as a predetermined non-linear function of inlet pressure. A pair of opposed pistons are subjected to inlet and outlet pressures respectively and actuate a two-way valve for admitting pressure fluid to the outlet and permitting its return to the inlet. The forces on the pistons include pressure forces and also a biasing force whose value is determined by a third piston subjected to inlet pressure acting on the opposed pistons through a system of levers, a cam, and a spring.

3,741,611

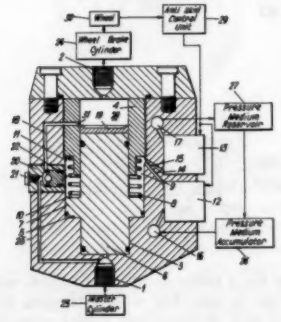
PRESSURE MEDIUM CONTROL ARRANGEMENT FOR AN ANTISKID SYSTEM

Otto Depenheuer, Bad Homburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 27, 1972, Ser. No. 248,072

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F 9 Claims



The pressure medium control arrangement for an antiskid system disclosed herein disposes a piston directly and movably in the brake line between the master cylinder and the wheel brake cylinder. In this manner the brake line connected to the master cylinder and the brake line connected to the wheel brake cylinder are separated from each other. One transverse surface of the piston is applied with pressure built up in the master cylinder upon braking. A shoulder on the piston is applied with pressure from an accumulator in the opposite direction in response to an incipient skid signal. Movement of the piston by accumulator pressure back towards the master cylinder input expands the volume of the brake line connected to the wheel brake cylinder and also pumps pressure medium back into the master cylinder. Heavy return springs and a pressure medium pump to return the pressure medium to the master cylinder are eliminated by the arrangement disclosed herein.

3,741,612

ANTI-SKID BRAKE SYSTEM

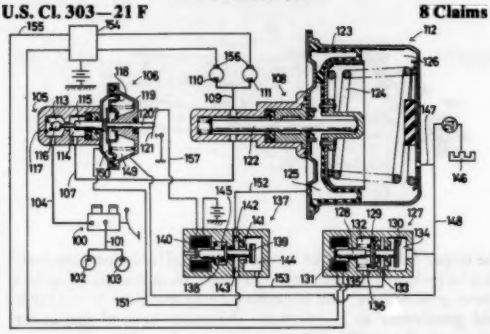
Masamoto Ando, Kariya, Aichi Pref., Toyohashi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Pref., Japan

Filed June 16, 1972, Ser. No. 263,433

Claims priority, application Japan, June 18, 1971, 46/043844

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F 8 Claims



An anti-skid brake system for the vehicle wheel which acts to limit, decrease, and permit subsequent increase of the brake application pressure in accordance with the generation of skid sensing signals, the brake system comprising a throttle means for controlling the pneumatic pressure supply to a servomotor assembly whereby the initial movement of the brake pressure reducing operation is started substantially simultaneously with generation of the skid sensing signal, while the brake pressure is subsequently reduced with a suitable decreasing ratio.

3,741,613

ELECTROMAGNETIC LEVITATION GUIDE

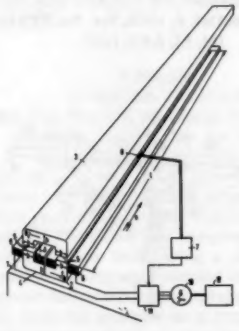
Carl-Eric Pfaler, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed July 14, 1971, Ser. No. 162,365

Claims priority, application Germany, July 18, 1970, P 20 35 840.1

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 6 Claims



An electromagnetic levitation guide for a movable body has at least one direct-current magnet to hold the body in levita-

tion. A ferromagnetic rail is arranged along the travel path of the body at a constant spacing from the magnet, whereby the rail constitutes the armature return for the flux developed by the magnet. The magnet has a core having pole faces and the armature return also has pole faces; these pole faces are long and narrow and extend longitudinally in the direction of the travel path.

3,741,614

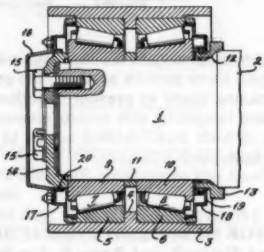
ROLLER BEARINGS

Ronald Anthony Judge, Kingsthorpe, England, assignor to The Timken Company, Canton, Ohio

Filed Aug. 27, 1971, Ser. No. 175,595

Int. Cl. F16c *19/14*

U.S. Cl. 308—180 **3 Claims**



An axle box receives a pair of roller bearings and has an inwardly projecting abutment against which the outer races of the roller bearings abut. The inner races of the bearings receive a reduced journal at the end of an axle and are captured between a shoulder at one end of the journal and an end cap at the other end of the journal. A spacer is fitted around the journal and between the two inner races, and this spacer is selected to provide the correct adjustment for the bearings. The abutment encircles the spacer and is disposed between the outer races of the bearings so that thrust loading is transmitted between the axle box and bearings through the abutment.

3,741,615

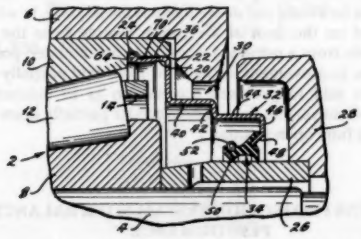
BEARING SEAL CASE MOUNTING

Dennis L. Otto, Malvern, Ohio, assignor to The Timken Company, Canton, Ohio

Filed May 3, 1971, Ser. No. 139,521

Int. Cl. F16c *33/78*; F16j *15/32*

U.S. Cl. 308—187.1 **3 Claims**



A bearing seal case has a large circumferential wall which fits into a cylindrical socket in the end of a bearing cup. The circumferential wall includes an enlarged portion which frictionally engages the cylindrical surface of the socket by reason of an interference fit between the two, a reduced portion which tapers inwardly from the enlarged portion and is spaced inwardly from the cylindrical surface of the socket, and a locking bead which projects outwardly beyond the reduced and enlarged portions and into a relief formed in the cup at the end of the socket. To prevent slippage between the seal case and the cup, an elastomeric material is bonded to the reduced portion, and this material is interposed between the cylindrical surface of the socket and the reduced portion in a distorted condition so that it remains firmly engaged with the cup when the normal interference fit between the enlarged portion and the cylindrical socket wall diminishes to the extent that the seal case might otherwise work loose.

3,741,616

BEARING, PARTICULARLY FOR VEHICLE SUN VISOR

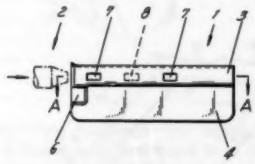
Gert Mahler, Radevormwald, and Wolfgang Meissner, Wengern, both of Germany, assignors to Gebr. Hoppich G.m.b.H., Wuppertal-Elberfeld, Germany

Filed Feb. 19, 1971, Ser. No. 116,826

Claims priority, application Germany, May 22, 1970, G 70 19 067.9

Int. Cl. F16c *33/04*

U.S. Cl. 308—237 **8 Claims**



A bearing formed by folding a sheet to create a hollow, cylindrical shell, bearing body for receiving a bearing shaft and flaps extending beyond the bearing body, means extending over a short length of the bearing body for holding the flaps of the folded sheet together to impart resiliency to the bearing body; a plurality of spaced projections on diametrically opposed locations in the interior of the shell of the bearing body, for being engaged by the bearing shaft, and for causing the bearing body to flex outward and to press inward against the bearing shaft, thereby to resiliently brake the visor against undesired reorientation.

3,741,617

SELF-SERVICE MERCHANDISER

Lawrence E. Gloyd, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

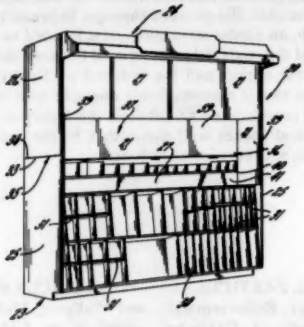
Filed Aug. 30, 1971, Ser. No. 176,019

Int. Cl. A47b *87/00*

U.S. Cl. 312—108 **8 Claims**

A knockdown, portable merchandiser includes a base section with upright side walls spanned by a back wall and a plurality of open front compartments located between the side walls for self-service storage of retail articles. An upper section fits edge-to-edge on top of the base section and includes a storage box projecting below the lower edge of the upper section for insertion into the upper end of the base section to align and stabilize the upper section on top of the base section.

Rectangular panels overlap the side walls of the upper section and the base section with opposite ends of the panels attached



to the side walls of the base section and upper section, respectively, to hold the upper section on top of the base section.

3,741,618

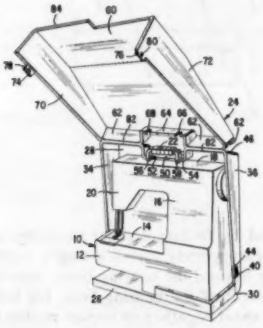
SEWING MACHINE CASES

Albert L. Newman, Cleveland Heights, Ohio, assignor to The Singer Company, New York, N.Y.

Filed May 3, 1971, Ser. No. 139,485

Int. Cl. A47b *21/00, 95/02*

U.S. Cl. 312—208 **1 Claim**



An integrally formed case for a sewing machine which when closed provides a protective enclosure when the sewing machine is carried and provides a work supporting surface when the sewing machine is operated. The case is removably affixed to the sewing machine and when opened exposes the tubular bed for use.

3,741,619

LOCKING APPARATUS FOR VENDING MACHINES OR THE LIKE

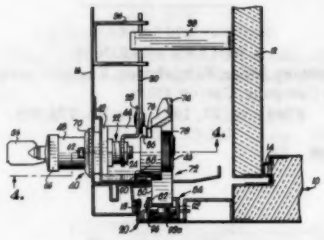
Kermit W. Dyer, Overland Park, Kans.; John V. Handley, Kansas City, Mo., and Judson D. Smith, Prairie Village, Kans., assignors to The Vendo Company, Kansas City, Mo.

Filed Oct. 27, 1971, Ser. No. 192,981

Int. Cl. E05b *65/04*

U.S. Cl. 312—215 **14 Claims**

A locking system for a vending machine cabinet having an inner product area door and an outer security door for closing the cabinet as a whole utilizes the latch operating handle associated with the primary lock on the outer door, which latches the outer door to the cabinet, to conceal and prevent access to the secondary lock, which latches the two doors together with a space for housing control elements confined therebetween. Partial rotation of the handle when the primary lock is unlocked, exposes the secondary lock to permit unlocking of the latter without causing unlatching of the outer door from the cabinet, thus permitting the doors to be unlocked from one another as a prelude to opening of the outer door only for access to said housing space without exposing the storage area of the cabinet to ambient temperature air as



would occur upon opening of the inner door also. Release of the primary lock alone permits access to the product area but not to the housing space to prevent unauthorized access to stored coins and tampering with control elements therewithin; while release of both locks permits access to either or both said area and said space, if desired.

3,741,620

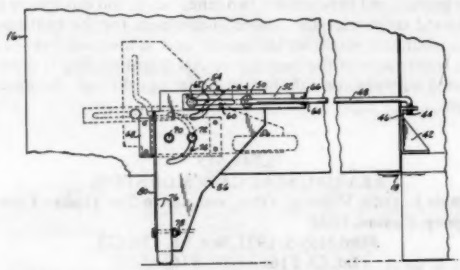
FIFTH LEG FOR MERCHANDISING MACHINE CABINET

Leo Kull, West Caldwell, and Bruce B. Landis, Long Valley, both of N.J., assignors to Rowe International Inc., Whippany, N.J.

Filed Jan. 17, 1972, Ser. No. 218,071

Int. Cl. A47b *96/00*

U.S. Cl. 312—276 **14 Claims**



A fifth leg for a merchandising machine cabinet having a door carrying a secondary merchandising unit and having a principal merchandising unit mounted in the cabinet so as to permit it to be swung out of the cabinet for loading, in which a leg pivoted on the door at a location remote from the door hinge moves from a retracted position to an extended position in response to movement of the door from said partially open position to said fully closed position so as to balance the machine whenever the door is between its partially open position and its fully open position.

3,741,621

ADD LENS PROJECTION SYSTEM WITH BALANCED PERFORMANCE

George L. McCrobie, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

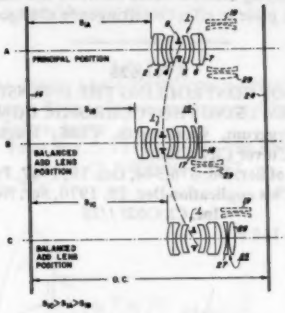
Filed Apr. 1, 1971, Ser. No. 130,134

Int. Cl. G02b *15/10, 7/04*

U.S. Cl. 350—183 **7 Claims**

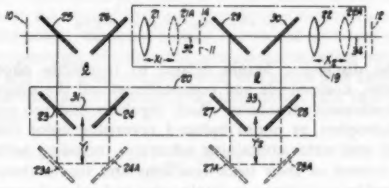
An add lens projection system is designed such that substantially similar system performance is obtained with added and subtracted add lens elements at balanced positions on either

side of a principal position at which the basic lens combination is designed. The basic lens combination may include a non-



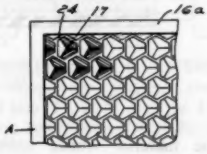
symmetrical split dagor lens or a non-symmetrical heliar lens plus singlet.

3,741,622
VARIABLE MAGNIFICATION OPTICAL SYSTEM
Arthur Cox, Park Ridge, Ill., assignor to The Austin Company, Cleveland, Ohio
Filed Aug. 4, 1971, Ser. No. 168,893
Int. Cl. G02b 7/04
U.S. Cl. 350—40 **13 Claims**



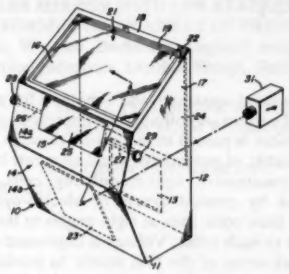
A variable magnification optical system is disclosed utilizing movable focus devices and movable reflective devices to obtain an extremely wide variation in magnification. A concave mirror and correcting lens is used for image input to the optical system and to correct the Petzval sum of the system.

3,741,623
COMBINED LENS AND REFLECTOR
Michael J. Mihalik, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Amherstburg, Ontario, Canada
Filed Aug. 14, 1970, Ser. No. 63,709
Int. Cl. G02b 5/12
U.S. Cl. 350—103 **11 Claims**



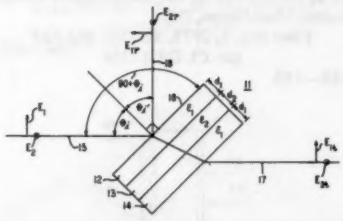
A combined lens and reflector comprising a body of light transmitting material having an outer surface and an inner surface. The inner surface is formed of a plurality of spaced cubic prisms separated by flat areas. Each prism comprises three surfaces intersecting one another to form a cube corner, the lines of intersection of said surfaces extending to a base having six sides comprising alternating long and short sides with each line of intersection extending and intersecting a short side intermediate its ends. A method of making a combined lens and reflector is disclosed wherein a plurality of reflector pins having cubic ends are assembled together, an electroform is formed to produce a body having recesses each of which comprises a cubic shape. The electroform is then machined so that the bases of the recesses define hexagonal shapes having surfaces lying in a common plane. The lines of intersection of the cubic recesses intersect the short sides of the bases.

3,741,624
PROJECTOR DEVICE FOR DRAWING
Charles H. Kuntz, 340 Great Oaks Drive, Dayton, Ohio
Filed Aug. 4, 1971, Ser. No. 168,862
Int. Cl. G03b 21/56
U.S. Cl. 350—121 **6 Claims**



A device receiving projected light images and reflecting them through a transparent work table from the underside. A user of the device mounts a work sheet on the top surface of the table and uses the image projected therethrough to depict a like image, or portions of it, on the work sheet. The device includes an adjustable mirror for enabling the user to obtain a direct view of the projected image when desired.

3,741,625
POLARIZATION-INSENSITIVE MILLIMETER-WAVE DIRECTIONAL COUPLER
Adel Abdel Moneim Saleh, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 21, 1971, Ser. No. 154,995
Int. Cl. G02b 27/28
U.S. Cl. 350—147 **5 Claims**



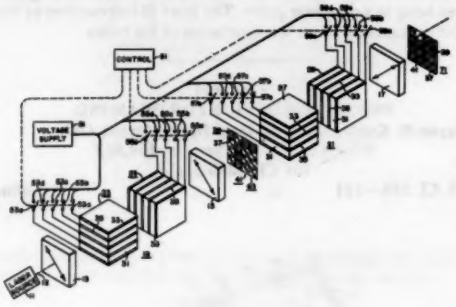
A polarization insensitive quasi-optical directional coupler comprising three contiguous dielectric layers. Polarization insensitivity of the coupler is realized by selecting the thicknesses and dielectric constants of the layers and the angular orientation of the coupler such that they satisfy predetermined relationships.

3,741,626

COMMUNICATION

John L. Wentz, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 18, 1971, Ser. No. 172,850
Int. Cl. G02f 1/26
U.S. Cl. 350—150 12 Claims



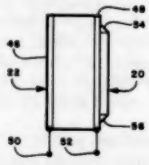
There is disclosed apparatus and a method for producing a selected visual pattern. A colliminated linearly-polarized laser beam of radiation, is passed in succession through, and subdivided into a matrix of potentially visual elements by, a pair of matrices of coextensive light-modulating cells, each cell matrix formed by crossed arrays of electro-optic crystals disposed with their optic axes at right angles to the beam and at right angles to each other. Voltage is impressed on selected crystals of each array of the first matrix to produce a phase shift of 90° in the plane of polarization of the elements of the beam passed by these selected crystals. The beam emerging from the first cell matrix is passed through a linear polarizer whose polarization is in the same plane as the incident beam, the polarizer passes only elements of the beam which were modulated by crystals of both arrays and unmodulated elements. Voltage is impressed on crystals of each array forming the second matrix which are coextensive with the selected crystals of the first matrix; this voltage shifts the plane of polarization of the beam elements passed by both crystals of the second matrix by 90°. The beam emerging from the second matrix is passed through a polarizer whose plane of polarization is at 90° to the polarization of the incident beam. Only the elements of the beam which pass through the crystals of all four arrays emerges.

3,741,627

STRAIN BIASED FERROELECTRIC ELECTRO-OPTICS

Gene H. Haertling; Cecil E. Land, and Ira D. McKinney, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 1, 1971, Ser. No. 203,723
Int. Cl. G02f 1/26
U.S. Cl. 350—150 8 Claims



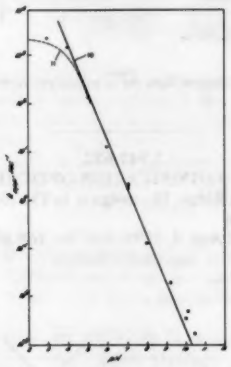
An electrooptic birefringent device and apparatus using the same including a ferroelectric ceramic plate, which is capable of exhibiting electrically induced birefringence effects, rigidly mounted on a ferroelectric structure, means for electrically inducing a dimensional change in said piezoelectric structure to produce a uniaxial stress in said ceramic plate in a direction parallel to the major surfaces of said plate, and means for thereafter applying electric fields between the major surfaces of the ceramic plate to effect birefringence changes therein.

3,741,628

METHOD OF CONTROLLING THE INTENSITY OF A LIGHT BEAM USING PHOTOCHROMIC COMPOUNDS

John D. Margerum, Chatsworth, Calif., Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 676,544, Oct. 19, 1967, Pat. No. 3,649,549. This application Dec. 29, 1970, Ser. No. 102,547
Int. Cl. G02f 1/36
U.S. Cl. 350—160 P 6 Claims



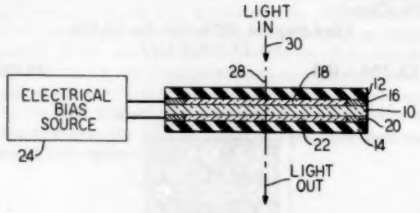
The disclosure herein relates to reversible phototropic systems, compounds and compositions and the discovery of photochromic structures which regularly undergo reversible phototropism as photo induced reversible color change in water and water containing substrates including particularly the control of their back reactions and the method of use thereof by providing a multiple color and color change indicator and/or light filters.

3,741,629

ELECTRONICALLY VARIABLE IRIS OR STOP MECHANISMS

Frederic Jay Kahn, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 26, 1971, Ser. No. 192,115
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 14 Claims



An electro-optic material whose optical transmission characteristic varies with applied voltage is disposed between two planar electrodes. One of the electrodes comprises a high-resistivity transparent section bounded by a low-resistivity annular section. Application of a voltage between the annular section and the other electrode establishes a radially-directed voltage gradient in the plane of the one electrode. In turn, the voltage drop across the electro-optic material is a function of

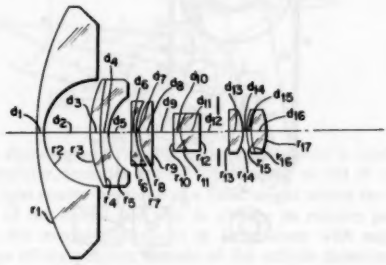
radial distance from the annular section to the center of the bounded section. In this way the optical transmission characteristic of the material is selectively controlled in a radial manner to achieve an electronically variable iris effect or an electronically-variable stop effect.

3,741,630

ULTRA-WIDE ANGLE PHOTOGRAPHIC LENS

Jihei Nakagawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1971, Ser. No. 196,080
Int. Cl. G02b 9/62, 9/62
U.S. Cl. 350—214 **4 Claims**



Ultra-wide angle photographic lens having a sufficiently long back focus suitable for use in a single lens reflex camera and consisting of six lens components of which the first to third lens components beginning at the object side are of negative power, the fourth, fifth and sixth lens components being of positive power, the second, third, fourth and sixth lens components consisting of cemented lens elements, while each of the first and fifth lens groups consists of a single lens element. The ultra-wide angle photographic lens satisfies the following conditions:

$$f<|f_{123}|<2.5f \quad (1)$$

$$n_2>n_3;\ 15f<r_4<35f \quad (2)$$

$$\nu_4>\nu_5;\ f<r_7<3.5f \quad (3)$$

$$f<r_{15}<3.5f \quad (4)$$

$$\nu_9<30;\ \nu_{10}>50 \quad (5)$$

where:

f = focal length of the entire system

f_{123} = resultant focal length of the first to third lens components, inclusive

r_i, n_i, ν_i = radius of curvature, refractive index and Abbe number, respectively, of each of the lens elements, i beginning at the object side

d_i = thickness of the lens element and air gap, i beginning at the objective side.

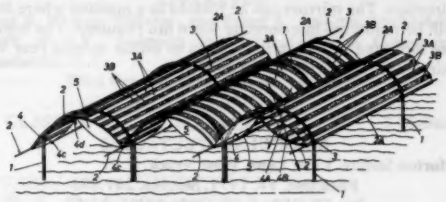
3,741,631

RADIATION INCIDENCE CONTROL MEANS

Nikolaus Laing, Aldingen near Stuttgart, Hofener, Germany

Filed Mar. 11, 1971, Ser. No. 123,210
Claims priority, application Switzerland, Mar. 16, 1970, 3853/70
Int. Cl. G02f 1/30
U.S. Cl. 350—267 **5 Claims**

The described invention makes use of at least two screens which have complementary transparent and opaque patterns and which are relatively movable towards and away from each other so that when adjacent they obturate radiation and when separated they pass it. Thus radiation, for example upon a plant-cultivation area or into a green house, is controllable. Selective filtration may be used to control selected parts of the



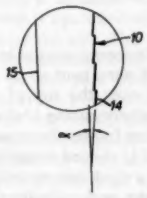
spectrum. The operation is preferably by inflating and deflating spaces between the screens at least one of which is pliable.

3,741,632

ANTIGLARE MIRROR WITH ONE REFLECTING FACE FORMED OF AN ARRAY OF PRISMS

David Stern, Windsor, Berkshire, England, assignor to Combined Optical Industries, Limited, Slough, Buckinghamshire, England

Filed Jan. 12, 1971, Ser. No. 105,900
Claims priority, application Great Britain, Jan. 23, 1970, 3,435/70
Int. Cl. B60r 1/04; G02b 5/08
U.S. Cl. 350—281 **7 Claims**



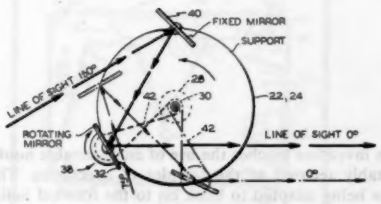
A method of making a mirror in which a body is moulded of transparent synthetic plastics material, the body having a plain face and a face equispaced therefrom and including linear prisms integral therewith, the prisms together forming a surface which will reflect incident light received from one direction in a common direction different from that in which the plain surface will reflect that incident light and with a reflective power different from that of the plain surface.

3,741,633

VEHICLE BLIND SIDE MIRROR SYSTEM

Ernest K. Haley, 134 Northwestern Parkway, Louisville, Ky.

Filed Oct. 13, 1971, Ser. No. 188,882
Int. Cl. G02b 5/08
U.S. Cl. 350—302 **6 Claims**



A blind side mirror system and apparatus including a fixed mirror and a rotating mirror so combined and operable to provide blind side viewing when backing or turning a semi-trailer.

A belt drive is employed to pivot the rotating mirror according as the cab is turned. The mirror system is adjustable, and positioned and controlled from the cab, and can be positioned for view of the blind side when backing and turning in either direction. The mirrors can be rotated to a position where there will be minimum interference when not required. The mirrors are mounted in such a manner as to utilize normal rear view mirrors or direct viewing by the driver.

3,741,634

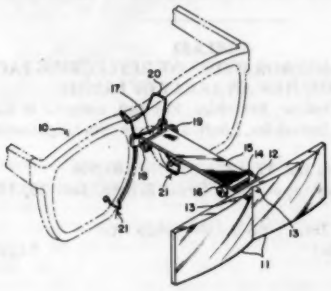
BINOCULAR SPECTACLES

Morton Stoltze, 1 Fox Lane, West Nyack, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,883

Int. Cl. G02c *7/08*; **G02b** *25/02, 27/02*

U.S. Cl. 351—57 **3 Claims**



Binocular spectacles comprising at least one binocular lens, a flexible cylindrical wire bent so as to have an upper U-shaped lip disposed over the top of conventional eyeglass frames and end members having U-shaped lips for engaging the sides of the eyeglass frames, for mounting the lenses on the frames, and a pair of U-shaped mounting members pivotably coupled together by a rigid thin mounting strip, and attached to the binocular lens and cylindrical wire, for pivotably coupling the binocular lens to the mounting wire and pivotably securing the binocular lenses on the eyeglass frames.

3,741,635

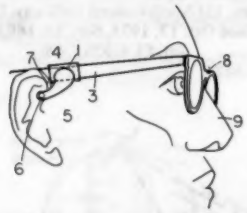
SPECTACLE POSITIONING AND SECURING DEVICES

Stanley Wortman, 3623 Stettinius Avenue, Cincinnati, Ohio

Filed Nov. 1, 1971, Ser. No. 194.433

Int. Cl. G02c *5/14*

U.S. Cl. 351—123 **3 Claims**



The invention teaches the use of an adjustable hook means adjustably secured to the temples of spectacles. The hook means being adapted to hook on to the forward helix of the ears of a person and fix the distance between the helix and the bridge of the nose of a person and thereby prevent the spectacles from sliding on the bridge of the nose of the person wearing the spectacles.

3,741,636

MOTION PICTURE PROJECTING DEVICE WHICH AUTOMATICALLY CHANGES THE PROJECTION SPEED

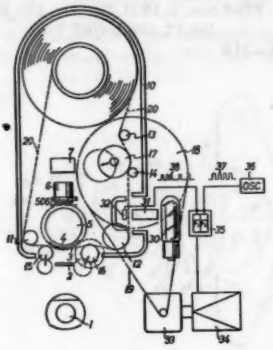
Yoshiaki Nakayama, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara-shi, Kanagawa, Japan

Filed Mar. 3, 1971, Ser. No. 120,417

Claims priority, application Japan, Mar. 3, 1970, 45/18119

Int. Cl. G03b *21/48*

U.S. Cl. 352—180 **5 Claims**



A motion picture projecting device having a means for sensing film projecting speed signals recorded on the film strip or on a separate magnetic recording tape and including a speed control means for automatically controlling the projection speed in response to the sensed speed signals to enable a reduced length of film per unit time to be used for more efficient use of the film.

3,741,637

SHEET-SHAPED FILM HOLDING MECHANISM IN PROJECTOR

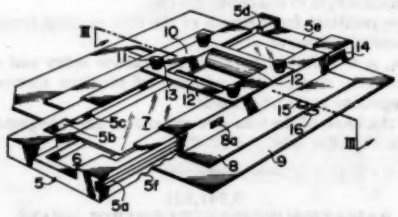
Mamoru Katsuragi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka, Japan

Filed Mar. 19, 1971, Ser. No. 125,962

Claims priority, application Japan, Mar. 19, 1970, 45/26319; Mar. 19, 1970, 45/26320; Mar. 26, 1970, 45/28987

Int. Cl. G03b *23/08, 21/00*

U.S. Cl. 353—120 **2 Claims**



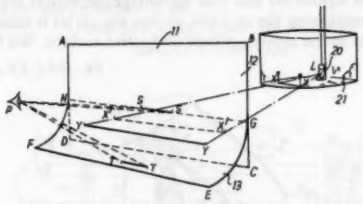
A sheet-shaped film holding mechanism for use with a projector adapted for individually projecting the respective picture frames of a sheet-shaped film having a number of picture frames on one sheet, such as, for example, a microfiche or jacket film. The film carrier is particularly adapted to facilitate loading and removal of the sheet-shaped film and switching from one picture frame to another. The holding mechanism includes rollers adapted for flattening a sheet-shaped film held thereby and for holding the film in such flattened condition.

3,741,638

VISUAL SIMULATION

Michael Edward Geary, Aylesbury, England, assignor to Redifon Air Trainers Limited, Aylesbury, England

Continuation-in-part of Ser. No. 710,603, Mar. 5, 1968, abandoned.
Filed Oct. 20, 1970, Ser. No. 82,425
Int. Cl. G03b 21/00
U.S. Cl. 353—122 1 Claim



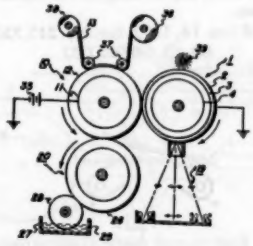
The shadowgraph visual simulation system,for a land vehicle simulator, includes a three-dimensional model of terrain; and a light source mounted at a fixed height within the boundaries of the model and able to change its relative position within the model boundaries in accordance with supposed changes of the position therein of the vehicle simulated. An upright translucent viewing screen is mounted at one side of the model and on to one side of this the light source projects a changing picture of the model scene. An observation station for a vehicle trainee is provided on the side of the screen opposite to the model and light source, wherein the point of observation of the trainee is low in relation to the screen height and the upper part of the screen is vertical and flat while the lower part curves progressively out of the vertical in the direction away from the model and light source, with the vertical upper part of the screen blending into the non-vertical lower part in a smooth curve at the "horizon" line of the picture on the screen, thereby improving the perspective for the case where the "viewpoint" represented by the light source is too high in relation to the model.

3,741,639

PHOTOELECTROPHORETIC IMAGING BY PHOSPHORESCENCE

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 32,238, Apr. 27, 1970, Pat. No. 3,681,221. This application Apr. 28, 1972, Ser. No. 248,767
Int. Cl. G03g 15/00
U.S. Cl. 355—3 5 Claims



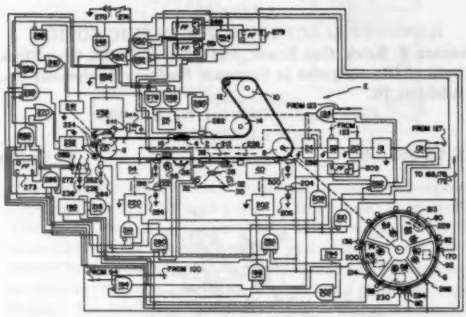
There is disclosed a photoelectrophoretic imaging system utilizing a phosphorescent energy source to provide the necessary radiation for imaging. In response to radiation emitted from the particular energy source the photoelectrophoretic particles present in the imaging suspension are effected in such a manner so as to produce an image.

3,741,640

SEQUENCER DEVICE FOR CONTROLLING WEB REPLACEMENT IN ELECTROPHOTOGRAPHIC APPARATUS

Lionel R. Hickey, Webster, and Frank L. Guyette, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,291
Int. Cl. G03g 15/00
U.S. Cl. 355—3 2 Claims



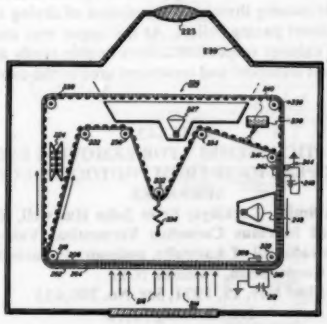
Electrophotographic copy apparatus is disclosed of the type having an electrophotosensitive web movable along an endless path relative to a plurality of actuable work stations, wherein each of the work stations is operative when actuated to perform a work operation on the web. The apparatus includes a mechanism effective when actuated for replacing the electrophotosensitive web on the path with a new web; and a sequencer which is effective in a first condition for controlling the actuation of the work stations for causing particular ones of the work stations to perform respective work operations on the web in timed relation to web movement in order to reproduce a predetermined number of copies of an information medium such as a document, and in a second condition for actuating the mechanism for replacing the electrophotosensitive web.

3,741,641

MANIFOLD IMAGING APPARATUS

Robert W. Gundlach, Victor, and John B. Wells, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 838,193, July 1, 1969, Pat. No. 3,653,892. This application Feb. 14, 1972, Ser. No. 225,884
Int. Cl. G03g 15/00
U.S. Cl. 355—5 11 Claims



An imaging apparatus wherein a reusable imaging layer comprising a cohesively weak electrically photosensitive

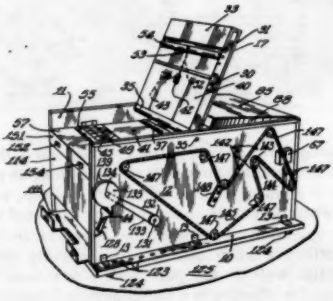
imaging material is sandwiched between a donor sheet and a receiver sheet, subjected to an electric field and exposed to an imagewise pattern of electromagnetic radiation to which it is sensitive. The donor and receiver sheets are then separated thereby fracturing the imaging layer in imagewise configuration. The imaging layer is rendered reusable by recombining the sandwich, subjecting it to an electric field while flood exposing the imaging layer to electromagnetic radiation to which it is sensitive. The apparatus is provided with a viewing station for viewing a positive or negative image.

3,741,642

HAND-FED ELECTROPHOTOGRAPHIC COPIER

Kenneth R. Reick, Oak Brook, and David F. Wolff, Glen Ellyn, both of Ill., assignors to Sunbeam Business Equipment Co., Addison, Ill.

Filed Aug. 6, 1969, Ser. No. 847,905
Int. Cl. G03g *15/12*
U.S. Cl. 355—8 **17 Claims**



A hand-fed electropnotographic copier cabinet has vertically aligned front entrances into copy sheet and document original guide passageways with respective conveyor rollers located to receive the respective edges of the copy and document at the same distance into the respective passages, with the document tripping a switch to illuminate a scanning aperture as the document approaches such aperture and the copy sheet approaches an exposure aperture while passing through an electrostatic charging device. The document maintains the switch closed until both the document and the copy sheet have left their respective apertures. An upper front cover serves as a document feed table and also as part of the document guide means carrying the control switch, idler rollers and a hold-down plate over the exposure aperture, and is mounted to be opened for immediate access to the document passage for any reason such as jamming difficulty. The exposed copy sheet travels through a developer tray, subsequent squeeze rollers and down a chute to a receiving point at the lower front of the cabinet while passing through a circulation of drying air and a set of copy sheet pacing rollers. At the upper rear and at the back of the cabinet respective covers enable ready access to the copy sheet transport and treatment area of the cabinet.

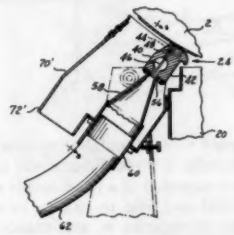
3,741,643

PNEUMATIC ASSEMBLY FOR REMOVING EXCESS DEVELOPER LIQUID FROM PHOTOCONDUCTIVE SURFACES

Ian Edward Smith, Lockleys; Peter John Hastwell, Elizabeth Grove, and Marinus Cornelius Vermeulen, Valley View, South Australia, all of Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.

Filed Nov. 19, 1971, Ser. No. 200,433
Int. Cl. G03g *15/10*
U.S. Cl. 355—10 **11 Claims**

Our invention contemplates a pneumatic assembly for removing excess developer liquid from photoconductive surfaces. Electrophotographic apparatus for exposing an electrostatically charged photoconductive surface to a pattern of light and shade to produce a latent electrostatic image and then toning that image with a liquid toner is known to the art. In order that such electrophotographic apparatus may operate over extended periods of time and produce copy without soiled background, it is necessary to remove excess liquid toner from the photoconductive surface. It has been suggested that the excess toner be removed with an elongated jet of air or air knife. We have discovered that the angle of incidence of the air jet is significant and that advantageous results are obtained by positioning the air knife so that the air jet is substantially normal to the moving photoconductive surface. We have



provided means for removing an accumulation of toner contained in the developer liquid from the air knife nozzle and from the photoconductive surface adjacent the nozzle.

The removal of excess toner liquid evaporates the light components of the liquid, such as light hydrocarbon liquids, and creates some air pollution. We have provided means for preventing the discharge of evaporated hydrocarbon vapors into the atmosphere. We accomplish this by a hood around the air knife assembly into which sufficient air is bled. An amount of polluted air, equivalent to that bled into the system, is passed into a filter such as one formed of activated charcoal before being discharged into the atmosphere to remove the light hydrocarbon vapors from the discharged air.

ERRATUM

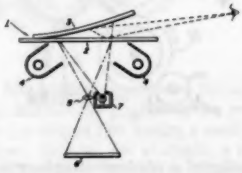
For Class 355—15 see:
Patent No. 3,740,864

3,741,644

ORIGINAL POSITION CONFIRMING MEANS FOR DUPLICATING APPARATUS

Seiji Matsumoto, Asaka; Satoru Honjo, Tokyo, both of Japan; Masamichi Sato, Urbana, Ill., and Osamu Fukushima, Setagava-ku, Tokyo, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 14, 1972, Ser. No. 217,732
Int. Cl. G03b *27/52*
U.S. Cl. 355—40 **3 Claims**



Apparatus is disclosed for use in aiding an operator to accurately position an original to be reproduced in registration with the aperture and transparent platen in a reproducing system. The disclosed apparatus includes an auxiliary light

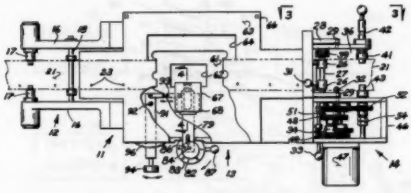
source which is disposed in a position apart from the path of projection of the optical system of the reproducing apparatus and illumination from the auxiliary light source is directed onto an area of the original to indicate the relative positioning between the original and the reproducing system.

3,741,645

PHOTO-ELECTRONIC FILM TRANSPORT

Henry C. Hollwedel, Jr., Belmont, and Donald R. Allan, Menlo Park, both of Calif., assignors to George Lithograph Company, San Francisco, Calif.

Filed Nov. 4, 1971, Ser. No. 195,699
Int. Cl. G03b 27/52
U.S. Cl. 355—41 **6 Claims**



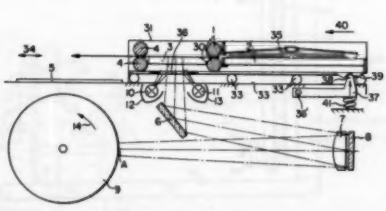
Film, such as microfilm, is moved through an apertured frame positioned between an exposure beam (e.g. enlarger lamp) and sensitized paper or other object to be exposed. The edge of the film is pre-marked with locating spots which interrupt light from a source on one side of the film to a photocell on the opposite side. The light interruption controls operation of a motor which drives the film. Preferably there are two consecutive lights and photocells, the first causing the motor to slow and, through clutches to vary the gear ratio, and the second stopping the film accurately located relative to the frame aperture. Means is also provided to move the photocells toward and away from the film edge to sense different channels of locating spots and other means to adjust timing and positioning by moving the photocells short distances longitudinally of the film.

3,741,646

COPYING APPARATUS

Wilhelm Knechtel, Biebertal; Gerhard Petersdorf, Pohlheim/W-Stbg, and Winfried Sandner, Rechtenbach, all of Germany, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1972, Ser. No. 225,483
Claims priority, application Germany, Feb. 16, 1971, P 21 07 321.2
Int. Cl. G03b 27/32
U.S. Cl. 355—50 **7 Claims**



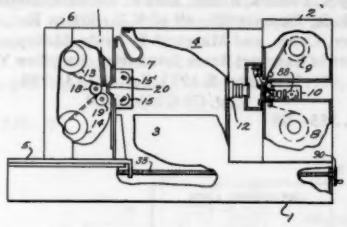
A copying apparatus in which thin or thick originals such as individual sheets or thick books are selectively driven over an illumination slit aperture, characterized by a transparent book support such as a glass plate connected to a known transport mechanism for individual sheets such as a pair of transport rolls. The book support is located on the extension of the transport mechanism, and the transport mechanism and the book support are selectively movable together.

3,741,647

MICROFILM COPIER

James W. Harris, Huntsville, Ala., assignor to Microcopy Inc., Huntsville, Ala.

Filed Dec. 18, 1970, Ser. No. 99,502
Int. Cl. G03b 27/48, 27/50
U.S. Cl. 355—50 **23 Claims**



A microfilm copier which permits continuous photographic copying from microfilm to paper or from paper to microfilm. The paper may be in the form of a roll or single sheets. The microfilm copier includes supply and take-up rolls for the microfilm and paper, a lens and projection lamp assembly for projecting from the developed to unexposed rolls, and a speed reducer for driving the paper and film rolls synchronously. In addition, the speed reducer compensates for changes in magnification factor between the microfilm and paper to maintain a proper ratio of driving rates between the paper drive means and the film drive means. Other features include, a crank and paper magazine carriage for changing the magnification factor, and a variable torque clutch for translating power from an input motor to the paper drive roller as a function of the amount of paper on the roll.

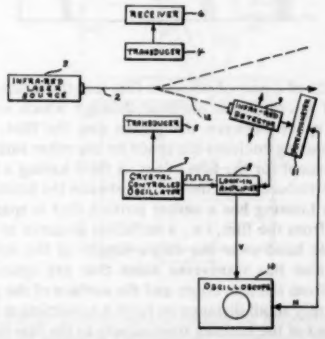
Some modifications to the basic microfilm copier include a drum holding a variety of lenses for changing magnification factors, a special magazine for holding microfilm which has been spliced end to end and looped for continuous projection, and an oscillating exposure plate adjacent to the paper exposure slot of the machine for making cutter marks on the exposed film when the microfilm copier is operating in a single sheet mode. A final modification involves the substitution for the paper magazine of another film magazine whereby a film microfilm copier is obtained.

3,741,648

ACOUSTIC BEAM SPLITTER FOR INFRARED LASERS

George H. Nickel, Los Alamos, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 16, 1971, Ser. No. 163,223
Int. Cl. H01s 3/12; G02f 1/32
U.S. Cl. 356—51 **1 Claim**



Ultrasonic waves are used to create a pseudograting that diffracts a small fraction of power from a high power infrared

laser beam. The deflected portion of beam is analyzed using a scanning type infrared detector. The laser beam acoustic wave interaction occurs in a gaseous medium.

3,741,649

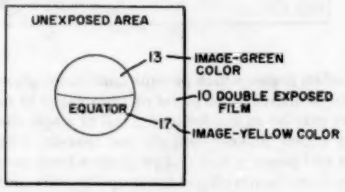
METHOD OF MAKING MULTI-COLOR SLIDE TRANSPARENCIES WITH SUPERIMPOSED IMAGES

Dorothy A. Podesta, Bronx; Judy L. Cardillo, Yonkers; Nancy E. Eisele, Pleasantville, all of N.Y.; Eileen Fox, Brookfield Center, Conn., and Margaret L. Neste, Mahopac, N.Y., assignors to Harcourt Brace Jovanovich, Inc., New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,190

Int. Cl. G03b 27/04

U.S. Cl. 355—88 **16 Claims**



The process uses the steps of double exposing a film to two specifically selected colors for the purpose of achieving a third color on the transparency. After the film has been exposed to one color to provide a background color, a layer containing an image of a second different color is exposed to the film within the area of the background color so that a latent image of a third color is produced on the film corresponding to the image of the layer.

3,741,650

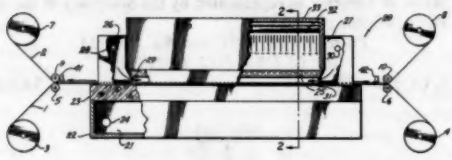
FILM HANDLING METHOD AND APPARATUS

Minard A. Leavitt, Sepulveda, and Poul B. Roulund, El Toro, both of Calif., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Continuation-in-part of Ser. No. 27,690, April 13, 1970. This application Feb. 11, 1971, Ser. No. 114,600

Int. Cl. G03b 27/20

U.S. Cl. 355—91 **36 Claims**



One side of a pair of adjacent film lengths is supported by a platen of microporous material through which air is forced into the space between the platen and the film. A trough-shaped housing encloses the space on the other side of the film lengths except for the film edges. A fluid having a large static head is introduced into the space between the housing and the film. The housing has a center portion that is spaced a large distance from the film, i.e., a sufficient distance to maintain a high static head over the entire length of the housing. The housing also has transverse sides that are spaced a small distance from the film edges and the surface of the platen, i.e., a sufficiently small distance to form a constriction in the fluid flowing out of the housing transversely to the film lengths. The housing is transparent. Light from a source is coupled through the housing to the film, thereby exposing it.

3,741,651

RECORDING DEVICE

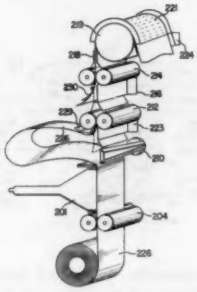
Akira Nishiyama, Neyagawa; Yoshiteru Izura, Toyonaka; Masaaki Tanaka; Yuji Takashima, both of Osaka, and Toyota Noguchi, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Oct. 12, 1971, Ser. No. 188,354

Claims priority, application Japan, Oct. 15, 1970, 45/91268; Oct. 15, 1970, 45/91269; Oct. 15, 1970, 45/91270; Oct. 15, 1970, 45/91271; Oct. 15, 1970, 45/91272; Mar. 30, 1971, 46/19350

Int. Cl. G03b 27/30

U.S. Cl. 355—100 **6 Claims**



A desired TV image displayed on a cathode-ray tube is transferred onto a recording paper which is placed in close contact with the faceplate of the tube, and the transferred image is then developed by a developing device. While the preceding exposed recording paper is being developed, the succeeding exposed recording paper is stored so that the problem that the developing time is lower than the exposure or image transfer time is overcome. Therefore, desired TV images may be recorded in a very small time interval.

3,741,652

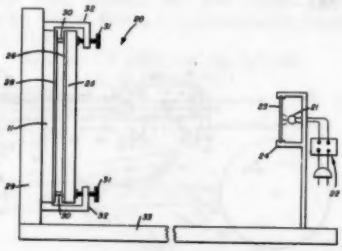
METHOD FOR PRODUCING PLATES HAVING ENLARGED HALFTONE PATTERNS AND ARTICLE PRODUCED BY SAID PROCESS

Blanchard M. Brock, Rochester, N.Y., and Paul R. Josephson, Jr., Fort Collins, Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,745

Int. Cl. G03b 27/02

U.S. Cl. 355—132 **2 Claims**



An unexposed lithographic-type photographic film or plate is placed a small distance away from a master halftone "-screen," and the film or plate is exposed through the screen with the use of a point source of substantially monochromatic light. An "enlarged" image of the screen, i.e., one showing halftone dots, is formed by diffraction on the film or plate. The degree of enlargement, i.e., the increase in spacing between

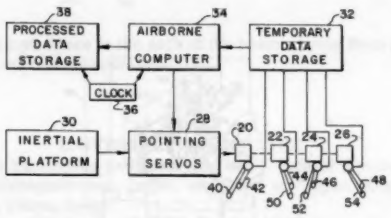
centers of adjacent halftone dots, is determined by the ratio of the light source to master screen, and light source to photographic film or plate distances. The enlarged screens are useful in the moire method for determining the dimensional stability of photographic films.

3,741,653

COMPUTER-AIDED LASER-BASED AIRBORNE MEASUREMENT SYSTEM

Oleg Svetlinchny, Chelmsford, Mass., assignor to Geosystems, Inc., Waltham, Mass.

Filed July 6, 1970, Ser. No. 52,524
Int. Cl. G01c 3/00
U.S. Cl. 356—141 **14 Claims**



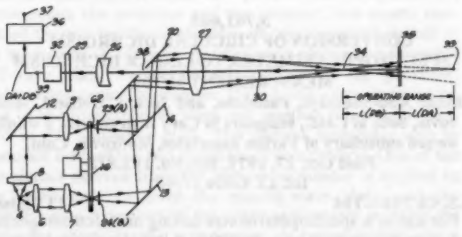
In an airborne vehicle, a system having laser sources and optical tracking assemblies electrically communicating with a computer is provided for determining the absolute (inertial) path, position, velocity and acceleration of the vehicle and for surveying the ground contour. A laser beam is directed toward a ground retroreflector and the reflected beam is tracked by an optical tracker. Another laser beam scans, in a pre-programmed pattern, the ground contour and another optical tracker follows the scanning beam. Modulation and phase comparison techniques are utilized to measure the range between the vehicle and the ground retroreflector and between the vehicle and the scanned ground. Data generated by the laser source and optical tracking assemblies are applied to the computer for determination of desired position data by triangulation. The inertial velocity and acceleration of the vehicle and the ground profile above sea level or some other specified reference surface are then determined using either airborne or ground based computer.

3,741,654

MEASURING APPARATUS

Irving R. Brenholdt, Greenwich, Conn., assignor to Farrand Optical Co., Inc., Valhalla, N.Y.

Filed Mar. 1, 1972, Ser. No. 230,599
Int. Cl. G01c 3/08
U.S. Cl. 356—4 **6 Claims**



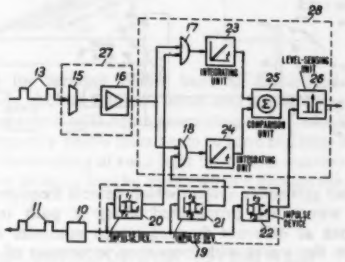
Disclosed is a non-contacting measuring system relying upon the difference in the focal points of two transmitted, differently modulated, coaxial light bundles. The difference in intensity of the light reflected back from a to-be-measured object located between the focal points of the two light bundles defines the precise location of the object relative to the two focal points.

3,741,655

MEANS FOR DETERMINING THE EXISTENCE OF AN OBJECT WITHIN A PREDETERMINED RANGE INTERVAL

Bernt Ling, and Anders Persson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 9, 1971, Ser. No. 206,277
Claims priority, application Sweden, Dec. 11, 1970, 16782/70
Int. Cl. G01c 3/08
U.S. Cl. 356—5 **2 Claims**



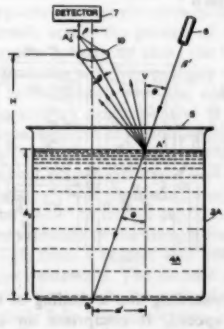
A signal-detector which detects whether or not an object exists at a predetermined distance comprises a detector unit and an evaluation device which operates with a first and second group of one or more time gaps, in which the first group comprises a first time gap arranged to coincide with the duration of at least a part of an expected and known signal and the second group of time gaps comprises a second time gap spaced from said first time gap and the magnitudes corresponding to the signals obtained during the time gaps are arranged to be compared in the evaluating device whereby an output signal from said device gives information as to whether an object exists or not.

3,741,656

FILL LEVEL MEASURING DEVICE

William A. Shapiro, Hackensack, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed May 27, 1971, Ser. No. 147,554
Int. Cl. G01f 23/00
U.S. Cl. 356—103 **8 Claims**

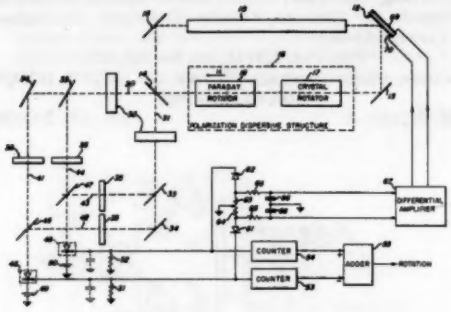


Apparatus employing optical means for measuring the level of a liquid or granular substance in a container under conditions when actual contact or even close proximity of the apparatus and the substance is impractical or undesirable.

3,741,657
LASER GYROSCOPE

Keimpe Andringa, Sherborn, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 3, 1971, Ser. No. 120,581
Int. Cl. G01b 9/02
U.S. Cl. 356—106 LR 17 Claims

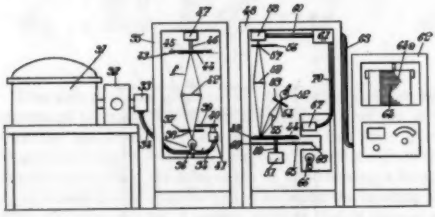


A laser gyroscope system which detects frequency shifts in which waves are propagated along a path in opposite directions at different frequencies to minimize interaction between the waves with frequency separation of the waves maintained by both reciprocal and non-reciprocal polarization dispersion in which frequencies of the two waves propagating in one direction lie between the two frequencies of waves propagating in the opposite direction. Rotation of the system produces shifts of the frequencies so that variation in the difference between the separation between the two upper frequencies, which propagate in opposite directions, and the separation between the two lower frequencies, which propagate in opposite directions, is used to measure rotation rate.

3,741,658
SPECTROMETER FOR THE FAR INFRARED

Armand Hadni, Nancy; Robert Thomas, Saint-Die, and Jacques Weber, Verdun, all of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar), Paris, France

Continuation-in-part of Ser. No. 761,997, Sept. 24, 1968, Pat. No. 3,619,063. This application Sept. 21, 1970, Ser. No. 73,869
Claims priority, application France, Sept. 24, 1968, 68761997; Sept. 22, 1969, 6932159
Int. Cl. G01b 9/02
U.S. Cl. 356—106 S 14 Claims

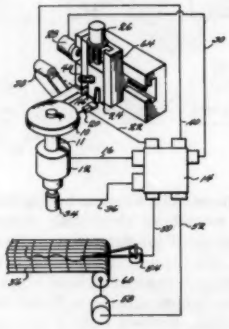


It enables a recording and a reading of interferograms at very different speeds. It comprises an interferometer, a recording mean, a reading means and a wave analyzer. The recording means produce on a support an area of aspect different from the aspect of the support, this area having a contour which reproduces the interferogram supplied by the interferometer. The reading means deliver, for each reading of the support, a signal representative of the transverse dimension of a part of the area whose variations reproduce the variations of the interferogram. To read the recording, there may be provided apodization means multiplying the signals delivered by the photo-electric cell; an eccentric opaque disc cooperates with a light source and a photo-electric cell, the apodization being done electronically in the unit. The invention enables very precise measurements in the far infrared.

3,741,659
BIAS CORRECTED MEASURING INSTRUMENT

J. Franklin Jones, Jr., Springfield, Vt., assignor to The Fellows Gear Shaper Company, Springfield Windsor, Vt.

Filed June 19, 1970, Ser. No. 47,791
Int. Cl. G01b 9/02, 11/00, 3/14
U.S. Cl. 356—109 11 Claims



A multiple coordinate measuring system of the type wherein a probe explores some feature of a part being measured and acts through a transducer or similar device to record a measurement on a chart or other record. Both the part and probe are moved along coordinated and predetermined paths so that the probe remains a fixed distance from the surface of the part being measured when the theoretical dimension corresponds to the actual dimension of the part. Detected deviations of the probe from the fixed distance represent deviations of the actual dimension from the theoretical dimension and are recorded on charts or other records. In one embodiment of the invention of this application, the actual positions of both the part being measured and the probe during measurement are continuously detected and deviations of the part and measuring instrument from their theoretical positions are detected and employed to correct the detected signals from the probe indicating the deviation of the probe from the fixed distance.

3,741,660
CONVERSION OF CIRCULAR DICHROISM SPECTROPOLARIMETER TO LINEAR DICHROISM MEASUREMENT MODE

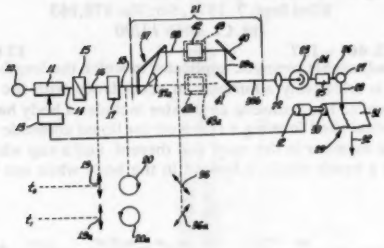
Ahmad Abu-Shumays, Pasadena, and Jack J. Duffield, Monrovia, both of Calif., assignors to Cary Instruments, a wholly owned subsidiary of Varian Associates, Monrovia, Calif.

Filed Oct. 27, 1971, Ser. No. 192,815
Int. Cl. G01n 21/40
U.S. Cl. 356—114 13 Claims

For use in a spectropolarimeter having an electromagnetic radiation beam source, a detector, a linear polarizer in the path of the beam between said source and detector, and first converter means in said path and characterized as operable to convert linearly polarized radiation to elliptically polarized radiation, the combination comprising:

a. second converter means in said path and characterized as

operable to convert elliptically polarized radiation to linearly polarized radiation, and



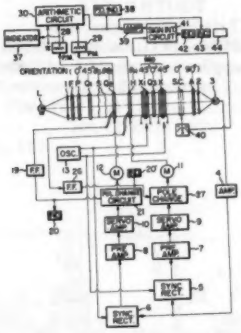
b. a sample space in the path of the beam passing from said second converter means.

3,741,661

UNIVERSAL POLARIMETER

Tadaaki Yamamoto, and Toshiyuki Kasai, both of Kawasaki-shi, Kanagawa-ken, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 12, 1971, Ser. No. 133,046
Claims priority, application Japan, Apr. 16, 1970, 45/32218
Int. Cl. G01n 21/40
U.S. Cl. 356—117 7 Claims



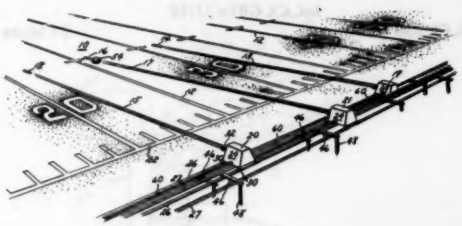
A polarimeter is constructed to measure the two variables of polarization (angle of elliptical orientation and phase difference) of a polarized light beam after transmitting through a specimen oriented at an arbitrary angle. A polarizer and an analyzer are arranged on an optical axis in spaced-apart and crossed-Nicol prism relation. An optical modulator positioned intermediate the polarizer and the analyzer, has means connected thereto for the application of two separated signals to the modulator. A rotatable quarter-wave plate and a rotatable half-wave plate are cooperably related to the polarizer, analyzer and optical modulator, there being a servomotor coupled to the quarter-wave plate and another servomotor coupled to the half-wave plate. The optical modulator acts to modulate both of the two variables of polarization. One of the two signals derived from the optical modulator is applied to one servomotor to drive the quarter-wave plate, and the second signal is applied to the other servomotor to drive the half-wave plate. In the polarimeter, is incorporated into a device which can determine the direction of a major axis of polarization ellipse and the phase-difference in units of wavelength. The device is also capable to indicate the direction of the "fast" axis of a specimen affecting a polarization state of light.

3,741,662

VISIBLE LINE MARKER

Willis C. Ploch, 20 Roosevelt Avenue, East Paterson, N.J.

Filed June 16, 1971, Ser. No. 153,755
Int. Cl. G01b 11/26
U.S. Cl. 356—172 2 Claims



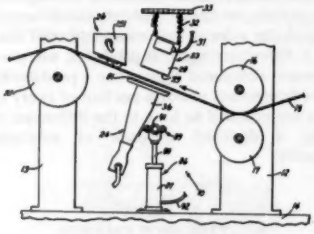
Apparatus for forming visible lines of demarcation for sporting events, such as football, tennis and horse racing. The apparatus comprises laser beam generating means which projects a low intensity visible laser beam to form the lines of demarcation. The crossing of such light beam demarcation lines is indicated by illuminating the object when it crosses the line.

3,741,663

HOLE DETECTOR (FOR MOVING WEB)

Michael J. Nevins, Delton, Mich., assignor to Nevins Machinery Corporation, Delton, Mich.

Filed Mar. 27, 1972, Ser. No. 238,291
Int. Cl. G01n 21/16, 21/32
U.S. Cl. 356—200 13 Claims

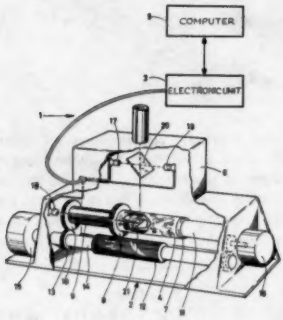


A hole detector for a moving web of translucent or opaque material capable of indicating the presence of relatively small holes at high web speeds. An elongate light source and light sensing trough are spaced on opposite sides of the moving web and extend transversely across the portion of the web to be monitored. Light sensors are spaced along the bottom wall of the trough remote from the web for receiving direct light inputs through web holes passing over the open top of the trough. The light sensors are nonresponsive to spurious light inputs and each sensor responds negligibly, at most, to passage of a web hole over neighboring sensors while permitting a space to be maintained between the web and the trough to prevent abrasion damage to the web being monitored despite normal flexing of the web. The trough depth substantially exceeds its width. The sidewalls of the trough diverge at a very shallow included angle from a bottom wall and terminate in shorter, parallel upper sidewalls. The sensors are separately compartmented within the trough, the walls of each compartment being substantially fully light absorptive. The trough has externally extending flanges at the top thereof for preventing light reflected from the undersurface of the web from reaching the sensors. The device is adapted to handle webs of decreased widths and includes devices for indicating the presence and locations of holes in the web.

3,741,664
METHOD FOR MEASURING THE LIGHT TRANSMISSION OF A PHOTOGRAPHIC FILM GIVING A DIGITIZED OUTPUT

Jan Magnus Torin, c/o Saab-Scania AB, 581 88 Linkoping, Sweden

Filed May 28, 1971, Ser. No. 147,950
Int. Cl. G01n 21/20
U.S. Cl. 356—203 **3 Claims**

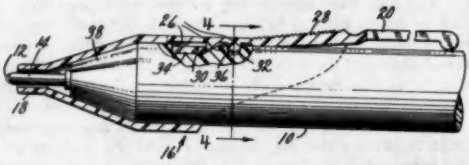


Clock pulses are generated at a rate synchronized to scanning of a substance with a light beam. The light is energized in pulses having uniform duration in terms of clock pulses. Output of a photocell responding to incident light is integrated to produce a reference signal of linearly varying magnitude. Magnitude of output of photocell receiving light passed through the substance is compared with the reference signal, and a difference signal is produced whenever the difference between compared signals has a predetermined sign. During a predetermined uniform portion of every light pulse, clock pulses are counted so long as the difference signal persists, giving a digitized measure of substance transparency/opacity.

3,741,665
WRITING IMPLEMENTS

Edward A. Smagala-Romanoff, Beverly, Mass., assignor to Charles F. Coles, Christopher M. Weld, Sally C. Leighton, Henry Hornblower, Michael J. Perrin, John Gikas and James Tenn, a part interest to each

Filed Aug. 25, 1970, Ser. No. 66,764
Int. Cl. B43k 7/12
U.S. Cl. 401—117 **5 Claims**



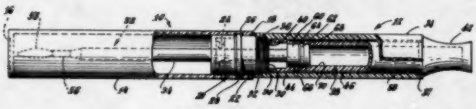
A captive shielding cap for a writing implement such as a ball point pen, having a retracted position in which the writing end of the implement is exposed and a projected protective position for shielding the writing end of the implement.

3,741,666
ADJUSTABLE COSMETIC APPLICATOR

Martin M. Vasas, and Arthur H. Moore, both of Fairfield, Conn., assignors to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn.

Filed Sept. 7, 1971, Ser. No. 178,163
Int. Cl. A46b 11/00
U.S. Cl. 401—127 **12 Claims**

An adjustable cosmetic applicator in which the length of the brush is selectively adjustable in accordance with the user's preference. The cosmetic applicator includes a body having a cylindrical shell forming a reservoir for liquid cosmetic with a closure member in the open end thereof, and a cap which includes a brush which is housed in the body when not is use.

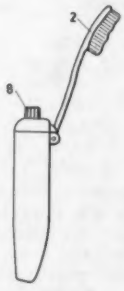


The cap includes a cylindrical sleeve in which a plunger is slidably engaged. The brush assembly is seated within the plunger and the length of the brush extending past the sleeve is selectively adjustable by sliding the plunger in either direction within the sleeve.

3,741,667
TOOTH BRUSH COMPLETE WITH DISPENSER FOR THE TOOTH PASTE

Giuseppe Cesari, 17 via Nani, Bologna, Italy

Filed May 6, 1971, Ser. No. 140,710
Claims priority, application Italy, May 14, 1970, 3449 A/70
Int. Cl. A46b 11/04
U.S. Cl. 401—175 **2 Claims**



A tooth brush which combines a container with a dispenser for the tooth paste. The container has a partial opening at the top and the tooth brush is supplied with paste while it is slotted into the aperture.

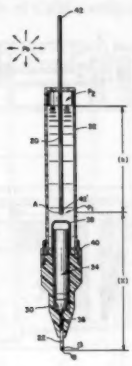
3,741,668
METHOD OF VENTING A STYLOGRAPHIC PEN

William E. Danjzcek; Jean Pierre Leuenberger, both of Easton; Fortunato J. Micale, and Ralph W. Wagner, both of Bethlehem, all of Pa., assignors to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Sept. 30, 1971, Ser. No. 185,020
Int. Cl. B43k 1/10
U.S. Cl. 401—258 **7 Claims**

A vent system for a tube writing pen wherein the vent consists of a longitudinally adjustable capillary tube extending

within the writing fluid reservoir and venting at varying

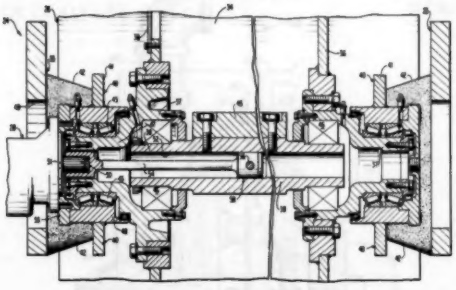


predetermined depths in the writing fluid. The upper end of the capillary tube is open to atmospheric pressure.

ERRATUM

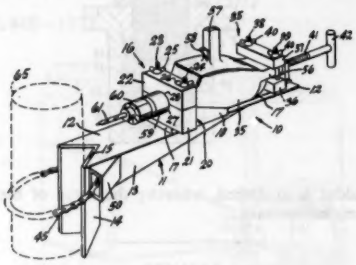
For Class 404—116 see:
Patent No. 3,741,083

3,741,669
GROUND COMPACTING APPARATUS
Jesse W. Harris, San Antonio, Tex., assignor to Tampo Manufacturing Company, Inc., San Antonio, Tex.
Filed July 1, 1971, Ser. No. 158,862
Int. Cl. E01c *19/28*
U.S. Cl. 404—117 **7 Claims**



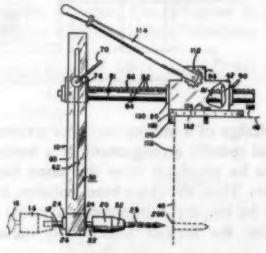
The roller of an earth compactor of the vibratory roller type is vibrated by revolving an eccentric mass about the roller axis. The eccentric mass is carried by a hollow shaft rotatable in bearings at end portions of the roller. A slender elongated steel drive shaft extends into one end of the hollow shaft. A hydraulic motor is detachably mounted for vibration with the roller and is connected by a spline connection to one end portion of the drive shaft. The other end portion of the drive shaft is rigidly connected to an interior portion of the hollow shaft. The length and flexibility of the drive shaft permit it to twist and flex so as to accommodate the substantial deflections and torque variations which occur as the eccentric mass is revolved to vibrate the roller.

3,741,670
PORTABLE POWER UNIT SUPPORT
Edward G. Wood, 14318 9 Mile Road, Battle Creek, Mich.
Filed July 22, 1971, Ser. No. 165,166
Int. Cl. B23b *45/14*
U.S. Cl. 408—92 **6 Claims**



A portable attachment is provided for use with power hand drills, comprising a frame, means for clamping the frame to a piece of work, a carriage mounted to travel longitudinally along said frame, clamping means mounted on the carriage adapted to clamp a power hand drill to same, and mechanical means for forcing the carriage to travel along the frame. In operation, a power hand drill is clamped to the carriage, the frame clamped to a workpiece, power applied to the motor, and the mechanical feed means operated to cause the power hand drill to drill holes into or otherwise operate upon the workpiece.

3,741,671
DRILL GUIDE
Robert F. Douglass, 5708 Willit Street, Omaha, Nebr.
Continuation of Ser. No. 716,413, March 27, 1968, abandoned. This application Jan. 8, 1971, Ser. No. 105,124
Int. Cl. B23b *45/14*
U.S. Cl. 408—114 **4 Claims**

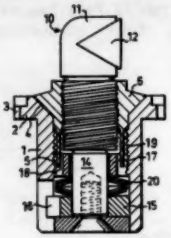


A drill guide comprising attachment means adapted to be anchored to a work-piece, a drill bit holder rotating in a bearing, means for adjustably positioning the bearing and bit holder with respect to the attachment means.

3,741,672
ADJUSTABLE TOOL HOLDER
Nils Rune Hedberg, Villavagen 11, 76200 Rimbo, Sweden
Filed July 29, 1971, Ser. No. 167,150
Int. Cl. B23b *29/02*
U.S. Cl. 408—146 **9 Claims**

The present invention concerns an adjustment tool holder in which a tool carrier is threaded into a rotatable, but axially stationary adjustment sleeve and is displaced by rotation of said sleeve. A spring means compensating the unavoidable clearance of the threads is active between a shoulder of said carrier and a disc arranged in the support for the tool holder in

such a way, that the adjustment sleeve upon turning causes such a displacement of the disc, that the spacing thereof from



said shoulder is unaltered, whereby the force of the spring means remains constant.

3,741,673

MODULAR MILLING MACHINE

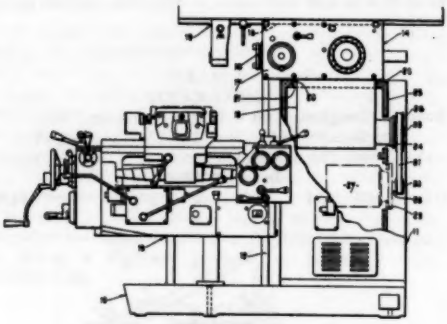
William J. Jackson, Tamworth, and Hubert Busby, Birmingham, both of England, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 21, 1971, Ser. No. 136,049

Claims priority, application Great Britain, Apr. 22, 1970, 19,202/70

Int. Cl. B23b *47/00*; B23c *1/00*

U.S. Cl. 408—234 **3 Claims**



A modular design of a milling machine structure to permit either a vertical spindle arrangement or a horizontal spindle arrangement to be provided from the same basic structural units or modules. Thus, the same base, column, knee and spindle carrier can be employed in either a vertical or horizontal spindle machine, the former additionally including a head member.

3,741,674

RADIAL ARM BORING MACHINE

Emil Karl Witzig, Leouberg; Rudolf Frank, Ludwigsburg, and Willi Klein, Denkendorf, all of Germany, assignors to Emil Karl Witzig, Stuttgart-Weilimdorf and Rudolf Frank, Ludwigsburg, both of Germany

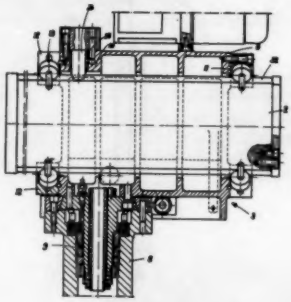
Filed Sept. 2, 1971, Ser. No. 177,310

Claims priority, application Germany, Sept. 5, 1970, P 20 44 150.3

Int. Cl. B23b *39/12*, *47/00*

U.S. Cl. 408—237 **12 Claims**

To locate the length of the extension arm of a radial arm boring machine in position, a clamping arrangement is provided which acts on the arm from above, the clamping arrangement including a cam, preferably a wedge member which acts against another wedge element pressing the arm against its guide parts secured to the upstanding column of the boring machine. The clamping parts may be hydraulically locked in position. Preferably, the arm is guided on the



column by rollers secured at end surfaces of a housing, the shafts of the rollers being adjustable, adjustment preferably being effected by a screw or spindle arrangement.

3,741,675

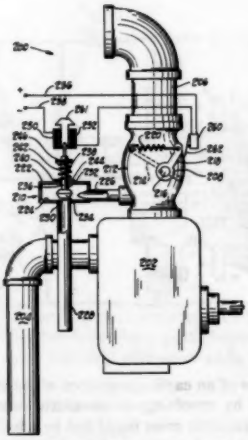
SELF-PRIMING CENTRIFUGAL PUMP WITH AUTOMATIC AIR RELEASE VALVE

Robert J. Porter, Mansfield, and Stanley B. McFarlin, Jeromesville, both of Ohio, assignors to The Gorman-Rupp Company, Mansfield, Ohio

Continuation-in-part of Ser. No. 773,549, Nov. 5, 1968, Pat. No. 3,575,521. This application Feb. 22, 1971, Ser. No. 117,392

Int. Cl. F04d *9/00*, *27/02*

U.S. Cl. 415—11 **11 Claims**



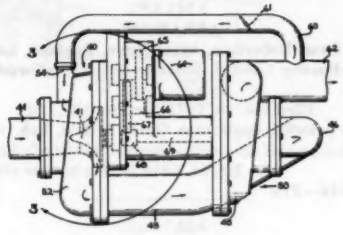
An automatic air release valve is connected to the discharge side of a self-priming centrifugal pump for venting air from the pumping system during the priming cycle. The valve automatically closes upon completion of the priming cycle to prevent venting of liquid during the pumping cycle. A flow responsive actuator maintains the valve closed.

3,741,676

SURGE CONTROL FOR FLUID COMPRESSORS

David Harold Silvern, Los Angeles, and Stanley J. Minton, Woodland Hills, both of Calif., assignors to Barodyne, Inc., Los Angeles, Calif.

Filed Oct. 12, 1971, Ser. No. 188,199
Int. Cl. F01d 1/12
U.S. Cl. 415—52 9 Claims



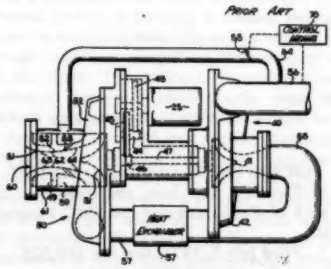
A control means for preventing surging under changing or low flow conditions in a fluid compressor such as an air compressor which includes a rotor and diffuser and at least two stages of compression is disclosed. Compressed air from the $n+1$ stage of the compressor is injected into the diffuser of the nth or lower stage of the compressor through a collection chamber which is disposed about the diffuser.

3,741,677

FLOW CONTROL APPARATUS FOR A CENTRIFUGAL COMPRESSOR

David Harold Silvern, Los Angeles, and Stanley J. Minton, Woodland Hills, both of Calif., assignors to Barodyne, Inc., Los Angeles, Calif.

Filed Oct. 12, 1971, Ser. No. 188,244
Int. Cl. F01d 1/12
U.S. Cl. 415—52 8 Claims



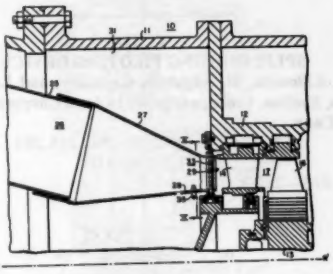
A control apparatus used for controlling a centrifugal compressor during low flow and overload conditions is disclosed. A manifold disposed in the inlet to the compressor includes passageways which allow fluid such as air from a higher stage of compression to be directed in a direction generally opposed to prevailing flow direction in the inlet thereby throttling the inlet flow. The manifold defines a sonic nozzle which throttles the inlet air during overload conditions.

3,741,678

COOLING AIR PROFILING STRUCTURES FOR A GAS TURBINE

Sterling F. Arlington, Philadelphia, Pa., and Thomas J. Rahaim, Claymont, Del., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 28, 1971, Ser. No. 138,145
Int. Cl. F01d 25/12
U.S. Cl. 415—117 4 Claims



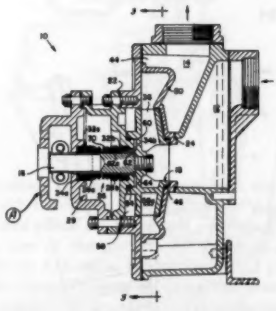
A gas turbine power plant having a combustion chamber including a transition portion to direct hot motive gases to the turbine rotor blades. An array of temperature profiling structures radially project into the transition portion to provide cooling fluid to profile the temperature of the hot motive gases. Each structure comprises a tubular support member having longitudinally extending slits for expansion purposes, the member projecting into an aperture in the transition portion and secured thereto. An air supply conduit is disposed within the support member and is fastened thereto outside of the combustion chamber. The profiling structures are securely positioned but allow for thermal expansion due to the relative temperature differentials among the transition portion, the support member, and the air conduit.

3,741,679

CENTRIFUGAL PUMP

Douglas Johnston, Decatur, Ala., assignor to John Blue Company, a Division of Subscription Television, Inc., New York, N.Y.

Filed Sept. 17, 1971, Ser. No. 181,449
Int. Cl. F04d 29/08, 29/22
U.S. Cl. 415—170 A 6 Claims



A centrifugal pump is provided with an improved impeller sealing arrangement which substantially reduces the likelihood of seal failure or leakage of the pump. The drive shaft of the impeller is sealed on one side of the pump housing by a mechanical seal carried in a non-pressurized reservoir of liquid, and a reduced pressure area is created by the pump impeller on an opposite side of the pump housing so that any tendency to leak will be from the reservoir to the pumped fluid.

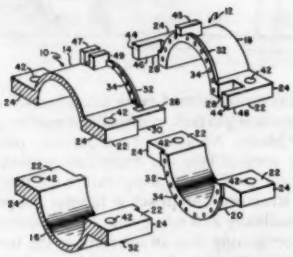
The mechanical seal which may be of a single or double face type is disposed within a reservoir containing an aqueous mixture of ethylene glycol which is under atmospheric pressure so that the normal direction of flow is from the reservoir through the seal faces and into the low pressure region. The above described pump may be provided with either straight centrifugal or self priming inlet housing sections and may be provided with a bearing pedestal or the pump shaft may be directly connected to the output shaft of an electric motor or other driving device.

3,741,680

SPLIT HOUSING PILOTING DEVICE

Irolt G. Killmann, St. Augustin, Germany, and Lawrence R. Matto, Shelton, Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Apr. 5, 1972, Ser. No. 241,281
Int. Cl. F01d *25/24*
U.S. Cl. 415—219 R **14 Claims**



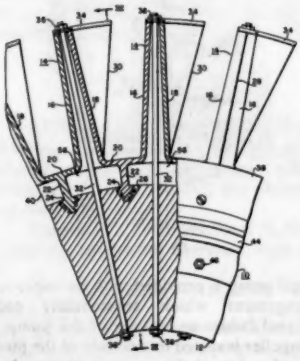
A pair of annular split housings are secured in end-to-end relationship so that their parting lines lie in a common plane. A series of tabs on one housing extends across the end-to-end junction into recesses in the adjacent housing to maintain the center lines of both housings within the common plane. Thus, the split line of the housings functions as the pilot surface for the housings.

3,741,681

HOLLOW TURBINE ROTOR ASSEMBLY

Stewart H. De Witt, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 28, 1971, Ser. No. 147,805
Int. Cl. F01d *5/18*
U.S. Cl. 416—95 **6 Claims**



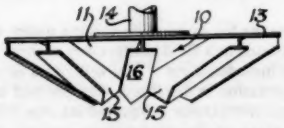
Rotor assembly for axial flow turbines and the like characterized in that the rotor blades are supported from both the root and the tip of the blade. The blades are held in place by bolts which extend through the blades and are connected at their inner ends to a rotor disc and at their outer ends to the blade tips or to a band surrounding an outer shroud for the blade tips.

3,741,682

AERATORS

William Swan Robertson, Manchester, England, assignor to Simon-Hartley Limited, Stoke-on-Trent, Staffordshire, England

Filed Jan. 20, 1971, Ser. No. 108,120
Claims priority, application Great Britain, Feb. 13, 1970, 7,028/70
Int. Cl. F01d *5/04*
U.S. Cl. 416—179 **9 Claims**



An aerator of the kind adapted to be rotated in the surface of a liquid for the purpose of agitating and aerating same, for example in the aeration of sewage liquors in the so-called activated sludge process, comprising a support member adapted to be rotated about its central vertical axis, a plurality of angularly spaced blades secured to the underside of said member and extending from a central region of the member towards its periphery, a plate being secured to the lower edge of each said blade and extending on both sides thereof at least along a part of the length of the blade from its outer end towards the center of the aerator.

3,741,683

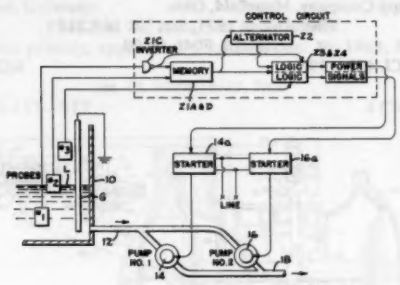
LIQUID LEVEL CONTROL SYSTEM

Louis S. McTamaney, San Jose, and Robert A. Begun, Los Gatos, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed July 2, 1971, Ser. No. 159,325
Int. Cl. F04b *41/06*
U.S. Cl. 417—7 **9 Claims**

A liquid level control system has two motorized pumps for emptying a tank. Three electric probes at staggered heights provide liquid level signals to a control circuit, which circuit embodies a flip-flop memory, a signal switching alternator and two logic channels, one for each pump motor. When the liquid level rises to ground out both the first and second probes, the memory flips and a pre-selected pump is turned on. If the liquid rises to the third probe, the second pump is turned on. The alternator cannot be switched until the liquid drops below the first (lowest) probe, whereupon the memory is restored to its original condition. This switches the alternator so that the

sequence of pump operation on the next rising cycle is reversed. This circuitry insures 50 percent pump alternation



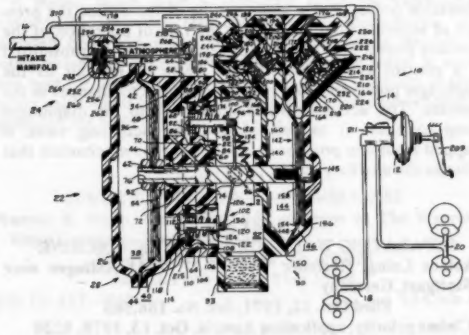
even though the liquid fluctuates about the first probe without reaching the second probe.

3,741,684

VACUUM INTENSIFIER

Leo J. Sobieralski, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Sept. 20, 1971, Ser. No. 181,991
Int. Cl. F04b *49/00*
U.S. Cl. 417—14 **13 Claims**



A vacuum intensifier for maintaining an operational partial vacuum within a predetermined range to effectively operate a vacuum powered device. A housing is divided into a power section and an evacuation section. The power section contains a first diaphragm which separates the power section into first and second chambers. The evacuation section contains a second diaphragm having a smaller area than the first diaphragm which separates the evacuation section into third and fourth chambers. The first and second diaphragms are connected together to correspondingly move in response to alternating porting of partial vacuum from a source and atmospheric pressure to the first and second chambers. Upon movement of the second diaphragm the third and fourth chamber will alternately inhale air from the vacuum powered device and exhale air to be dumped into a conduit going to the source of partial vacuum to uniformly lower the pressure level in the vacuum powered device.

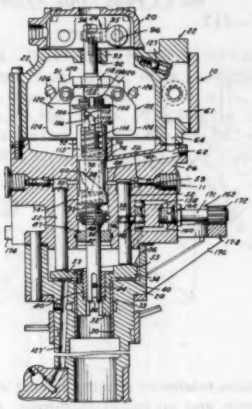
3,741,685

FLUID OR FUEL INJECTION PUMP ASSEMBLY

Aladar O. Simko, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 15, 1971, Ser. No. 198,677
Int. Cl. F04b *49/00*; F15b *15/26*; F02m *63/02*
U.S. Cl. 417—214 **7 Claims**

A fluid injection pump assembly, particulary adaptable for use as a fuel injection pump for an internal combustion engine having a plurality of cylinders. The pump assembly includes a plurality of reciprocable pumping means, one for each cylinder of the internal combustion engine. Means are coupled to certain of the reciprocable pumping means, preferably alternate ones, and these means are responsive to a predetermined external condition that controls the amount of fuel or liquid pumped by the pump for arresting the reciprocation of certain of the reciprocable pumping means. In an internal combustion engine fuel delivery is cut off to certain of the cylinders, for example, every other cylinder, during periods of idle or low load conditions on the internal combustion engine.

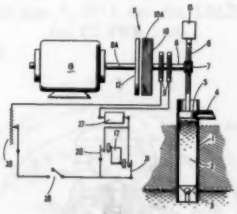


3,741,686

SELF RESONANT DRIVE FOR DEEP WELL PUMP

Edward W. Smith, P.O. Box 27, Milton, N.H.

Filed May 13, 1971, Ser. No. 143,082
Int. Cl. F04f *7/00*
U.S. Cl. 417—240 **24 Claims**



Resonant column pumping devices drive a liquid column in coincidence with the resonant oscillations of the column both in frequency and phase for maximum operating efficiency. A piston at the top of the column is driven at a speed corresponding to the half wave frequency, or an odd harmonic thereof, of the liquid column by using the resonant column frequency to control the frequency of application of the driving force impulses transmitted to the liquid column. Means comprising inertial means are coupled to the piston and include actuating means, such as a slideable plunger, inertially responsive to the position of the piston for actuating a position adjustable switch means. The switch means in turn controls the time of the occurrence of the application of the motion to the piston at the resonant frequency of the liquid column, and at the proper phase with relationship to the motion of the liquid column.

3,741,687

JET-ACTUATED MEMBRANE PUMP

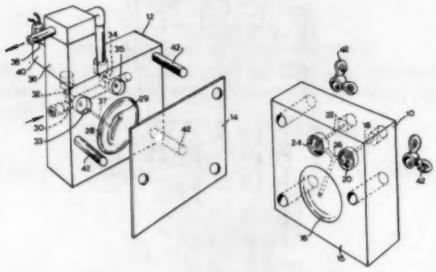
Ernst Holger Bertil Nystroem, P.O. Box 7, 1195 Dully/Bursinel, Switzerland

Filed Apr. 5, 1971, Ser. No. 131,055

Claims priority, application Great Britain, Apr. 15, 1970, 17,844/70

Int. Cl. F04b *35/02, 43/06*

U.S. Cl. 417—317 9 Claims



The invention relates to a pump having a reservoir having an inlet thereto and an outlet therefrom, and a membrane defining at least part of one wall of the reservoir and movable alternately to draw fluid into the reservoir through the inlet and to expel fluid from the reservoir through the outlet, a membrane serving to open and close the inlet and a membrane serving to open and close the outlet. One or more membranes may be used and the or each membrane is preferably movable in response to changes in fluid pressure on the opposite side thereof to the reservoir.

3,741,688

CIRCULATION PUMP FOR REFRIGERATION PLANT

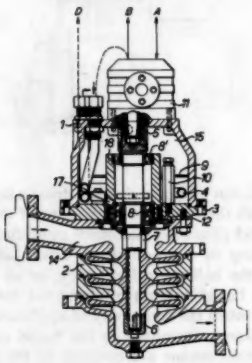
Johannes Anders Krosby, Hauketo, Norway, assignor to Kvaerner Brugs Kjoleaudeling A/S, Sandvika, Norway

Filed Aug. 12, 1971, Ser. No. 171,111

Claims priority, application Norway, Aug. 18, 1970, 3140/70

Int. Cl. F04b *17/00*

U.S. Cl. 417—372 5 Claims



A hydraulic or pneumatic motor for driving a pump in a refrigeration plant has the outlet conduit arranged in a loop in an oil chamber where the pump and motor is placed the loop giving off heat sufficient to evaporate cooling fluid which may leak into said chamber.

3,741,689

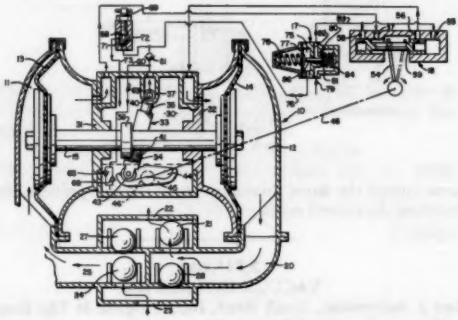
AIR OPERATED DIAPHRAGM PUMP

Warren E. Rupp, Mansfield, Ohio, assignor to The Warren Rupp Company, Mansfield, Ohio

Filed Aug. 5, 1971, Ser. No. 169,312

Int. Cl. F04b *17/00*

U.S. Cl. 417—393 6 Claims



An air-operated diaphragm pump and a governor for controlling its speed of operation. An auxiliary pump is driven by the diaphragm pump and pumps a separate fluid through an adjustable orifice. For a given setting of the orifice the pressure of separate fluid varies with the rate of operation of the auxiliary pump. The pressure of separate fluid is transmitted to a control valve which admits more or less air to the diaphragm pump actuator valve in response to changes in the pressure. The actuating valve directs air to the diaphragm pump to cause it to reciprocate. The actuating valve is snapped from one position to another by the mechanism that actuates the auxiliary pump.

3,741,690

SEPARATING WALL FOR MAGNETIC MACHINE

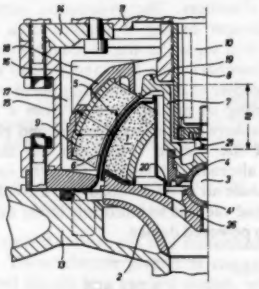
Nikolaus Laing, Hoefener Weg 35-37, 7141 Aldingen near Stuttgart, Germany

Filed Oct. 12, 1971, Ser. No. 188,565

Claims priority, application Austria, Oct. 13, 1970, 9220

Int. Cl. H02k *5/16*

U.S. Cl. 417—420 6 Claims



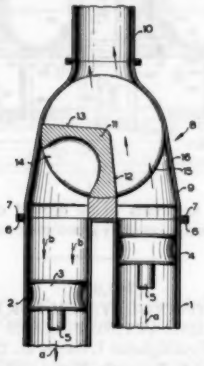
Spherical pole ring magnetic couplings having a spherical bearing adapted to drive a centrifugal pump and resides in a construction in which a spherical hermetic wall separating the poles is so formed as to have a tubular column, surrounded by a concave pole ring. The column supports the bearing, so that overall length of the coupling is reduced.

3,741,691

HYDRAULIC PISTON PUMP ASSEMBLY

Friedrich Wilhelm Schwing, Rathaustrasse 126, Wanne-Eickel, Germany

Filed Dec. 21, 1970, Ser. No. 100,270
Claims priority, application Germany, Dec. 20, 1969, P 19 63 875.6
Int. Cl. F04b 15/02, 7/00
U.S. Cl. 417—517 4 Claims



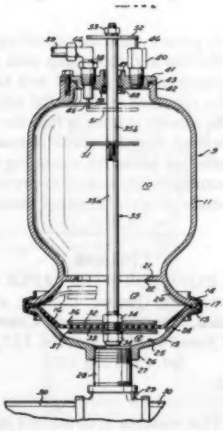
A piston pump with a hydraulic drive for conveying concrete has two concrete conveying cylinders having alternately operating pistons which suck concrete in through a rotary valve and discharge it through the same valve. A suction port for the two cylinders is arranged in the body of the rotary valve and is located between two discharge ports appertaining to the body of the rotary valve.

3,741,692

SURGE SUPPRESSOR FOR FLUID LINES

Warren E. Rupp, Mansfield, Ohio, assignor to The Warren Rupp Company, Mansfield, Ohio

Filed Dec. 17, 1970, Ser. No. 99,078
Int. Cl. F04b 11/00; F16l 55/04
U.S. Cl. 417—540 13 Claims



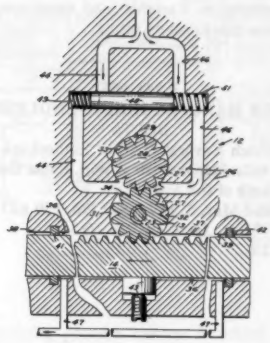
A surge suppressor for use with outlet conduits of pumps, such as air-operated diaphragm pumps, having a pulsating output and other fluid conduits that are subject to surges or shock pressures. The apparatus embodies a diaphragm, one side of which is subjected to the pressure of the fluid in the conduit and the other side of which is subjected to the pressure of air within a chamber. Means are provided for automatically compensating for changes in the fluid pressure in the conduit by supplying air to the chamber if the pressure in the conduit increases and automatically bleeding air from the chamber if the pressure decreases, thus maintaining a substantially constant volume of air in the chamber even though the pressure in the conduit to which the device is attached may vary.

3,741,693

REVERSELY DRIVABLE FLUIDIC DEVICE

Thomas R. Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 52,308, July 6, 1970, Pat. No. 3,628,623.
This application Oct. 7, 1971, Ser. No. 187,486
Int. Cl. F01c 21/16; F03c 3/00; F04c 15/04
U.S. Cl. 418—15 7 Claims



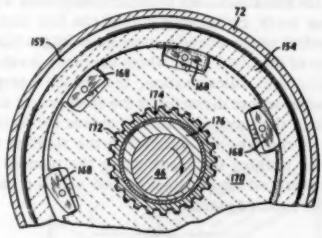
A reversely drivable double gear fluid motor adaptable for use in a vehicle power steering system in which linear displacement of one of the gears in a direction perpendicular to its axis of rotation within the gear chamber determines the direction of rotation of the motor.

3,741,694

POSITIVE DISPLACEMENT ROTARY ENGINE

Frederick L. Parsons, 759 Morningside Road, Ridgewood, N.J.

Filed Apr. 7, 1971, Ser. No. 132,140
Int. Cl. F03c 3/00
U.S. Cl. 418—61 12 Claims



A rotary engine for generating mechanical power from energy in a fluid stream includes a positive-displacement air compressor, a combustion chamber and a multiple-stage positive-displacement power extractor or expander, all arranged about a common drive shaft. Eccentrically mounted inner and outer cylindrical members in the expander form a crescent-shaped expansion chamber which is divided by circumferentially spaced rocker-slipper vanes into a plurality of expansion stages. Combustion gases entering the expansion stages are caused to expand upon movement thereof toward the chamber exhaust, and thus to deliver energy to one of the

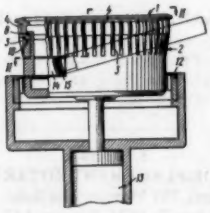
inner or outer members and thence to the drive shaft. A direct connection with the compressor provides high-pressure air flows within the expander for cooling and for sealing the expansion stages against leakage of combustion gases or lubricants, while reducing wear, partly by balancing the pressure forces exerted on the slippers by the combustion gases so as to urge the slippers into light sealing contact with the opposed member. The inner and outer members are arranged either to nutate one to the other or to rotate together at nearly the same speed, yielding significantly reduced relative sliding velocities therebetween to further reduce wear. Similar low-wear conditions are provided in the compressor, where eccentrically mounted double screw vanes, of a general V-shape in cross section, are caused to nutate within correspondingly shaped cavities in the housing so as to displace air at increasing pressure spirally towards a central outlet from suction inlets at each end. The vanes preferably are composed of flexible, nonmetallic material to simplify sealing and to enhance heat-transfer characteristics. Variable lead vanes may be used to develop optimum compression ratios.

3,741,695

DEVICE FOR MANUFACTURING ENDLESS TIMING BELTS

Arsenty Vasilievich Yavorsky, ulitsa Zatonskogo 14v, kv. 70, Kiev, and Vasily Stepanovich Ermin, ulitsa Gorkogo 8, Kv. 59., Alexin, both of U.S.S.R.

Filed Mar. 3, 1971, Ser. No. 120,621
Int. Cl. B29h 7/22
U.S. Cl. 425—28 **5 Claims**



A device for manufacturing endless timing belts with internal transverse teeth, comprising pulling the belt blank over a toothed mandrel whose outside diameter is larger than the inside diameter of the blank after which the blank is subjected to radial pressing and vulcanization; the device comprising a tapered mandrel whose diameter at the thicker end is equal to the diameter of the toothed mandrel, means for fastening the thicker end of the tapered mandrel to the toothed mandrel, and means for pushing the blank along the tapered mandrel from its thinner end to the thicker end and for pulling the blank over the toothed mandrel.

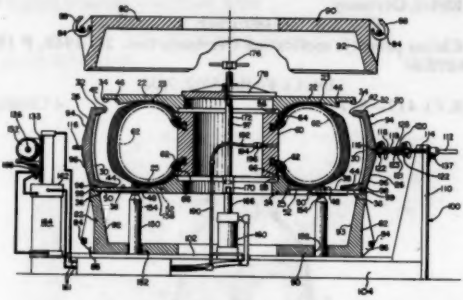
3,741,696

SEGMENTED TIRE MOLD

Alan Greenwood, Kent, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 1, 1971, Ser. No. 148,356
Int. Cl. B29h 5/08, 17/00
U.S. Cl. 425—47 **29 Claims**

A segmented tire mold having two sidewalls, a plurality of radially movable segments and a pair of internally conical casing rings cooperable with the segments to close the mold as the rings are urged coaxially together in a pot heater. A fixture cooperates with the mold to facilitate assembling or disassembling the mold. In the fixture, the casing rings can be moved axially away from the respective sidewalls and from each



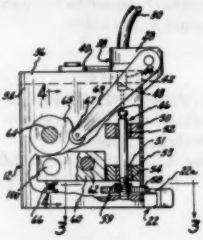
other, freeing the segments to be moved outwardly by individual screw jacks operated by a common motor.

3,741,697

REMOTE CONTROL SYSTEM FOR POWDER COMPACTING PRESSES

Joseph E. Smith, Birmingham; Georges D. DeTroyer, Grosse Ile, and Raymond P. DeSantis, Royal Oak, all of Mich., assignors to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Filed Feb. 2, 1972, Ser. No. 222,737
Int. Cl. B30b 11/02, 11/14, 11/22, 11/18
U.S. Cl. 425—78 **12 Claims**



A multiple cavity press system for providing at a remote station both part collection and tool setup with provision for incremental, fine adjustment of ram fill and ram press stroke. For each press, the required incremental adjustment may be controlled from the remote station so that the appropriate size and weight corrections may be made immediately upon inspection of the collected parts. An operating means including a pneumatically actuated slide is used to provide for the incremental adjustment of ram travel in either direction.

3,741,698

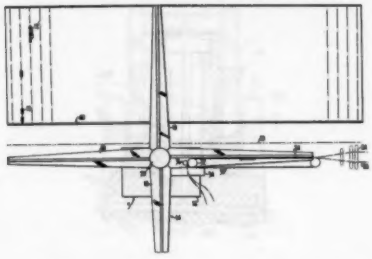
STICK INJECTOR WITH PAPER FEED

Italo Caroli, Westmount, Quebec, Canada, assignor to DBM Industries Limited, Montreal, Quebec, Canada

Filed June 16, 1971, Ser. No. 153,778
Int. Cl. A23g 5/02
U.S. Cl. 425—125 **9 Claims**

Apparatus is described for inserting sticks into liquid confection material. That material is contained in a mold which is being moved along through a bath of refrigerant. At least one and preferably many stick-gripping mechanisms that include a fixed element and a clamping element biased to releasably retain a stick therebetween are mounted on each arm of a supporting spider assembly. That spider assembly includes a plurality of arms that are disposed generally in a common plane, and is provided with means for reciprocally moving the spider

arms and gripping mechanisms transversely of that plane to effect both picking up and releasing of the sticks. In addition, the supporting spider assembly is indexable to pick-up sticks from a supply source at a pick-up station and transfer the sticks to a stick-release station. The supply of sticks comprises a strip of perforated paper or like material, with the sticks being supported in perforations in said strip. A stick-transferring conveyor is normally disposed over the moving molds at



the stick-release station. This conveyor includes a plurality of stick-supporting flights which are driven in synchronism with the moving molds. In that way the sticks can be inserted into the liquid confection material and supported therein until the material has itself hardened sufficient to support the sticks. Each stick-supporting flight includes a preformed backing leement and a biasing member co-operating therewith to frictionally and releasably retain each stick therebetween.

3,741,699

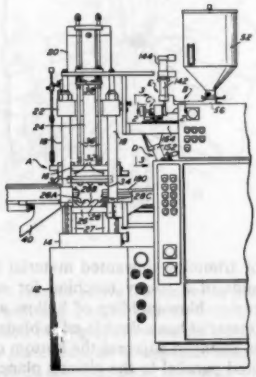
VARIABLE VOLUME AND CONTROLLED DENSITY FORMING MECHANISM FOR COMPRESSION MOLDING PRESSES

Vasken F. Arpajian, Huntingdon Valley, and Quentin M. White, Jenkintown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 45,078, June 10, 1970, Pat. No. 3,661,485. This application Mar. 15, 1972, Ser. No. 234,820

Int. Cl. B29c *3/04, 3/06*

U.S. Cl. 425—145 **13 Claims**



An automatic compression molding system, especially for thermosetting materials, in which an extruder preplasticizes the powder and charges the preplasticized mass into preforms. The preheated and preformed mass can be varied in volume, density and temperature prior to being dispensed into the mold cavities.

3,741,700

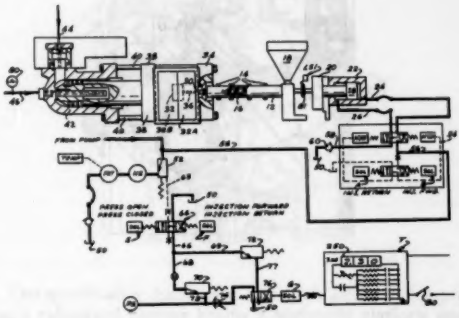
TIME MONITORED INJECTION MOLDING CYCLE WITH TIMED PRESSURE CONTROL

Herman R. Hutchinson, Wyncote; Vasken F. Arpajian, Huntingdon Valley, and Robert S. Malcomson, Lansdale, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 18,142, March 10, 1970, Pat. No. 3,642,402, and a continuation-in-part of Ser. No. 59,499, July 30, 1970, Pat. No. 3,695,800. This application Mar. 1, 1971, Ser. No. 119,975

Int. Cl. B28b *17/00*

U.S. Cl. 425—159 **11 Claims**



Injection molding process control in which the viscosity index of a shot being injected is measured by timing the advancement of the ram, preferably at constant hydraulic pressure, from the moment of opening of the relief valve to a predetermined ram position before the molds are filled. Variations from a normal interval empirically determined to produce good parts are compensated in the same shot being injected by automatically increasing or decreasing the length of time of imposition of primary high pressure through an electronic clock and then reducing the pressure level for the duration of the injection stroke.

3,741,701

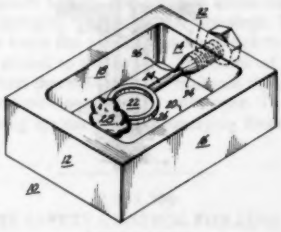
FRAME FOR PRODUCING CASTING FLASKS

Alden T. Nelson, 12413 First Avenue, South, Seattle, Wash.

Filed June 11, 1971, Ser. No. 152,271

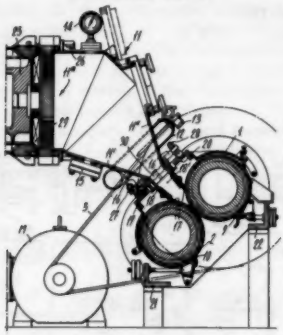
Int. Cl. B29c *1/00*

U.S. Cl. 425—175 **5 Claims**



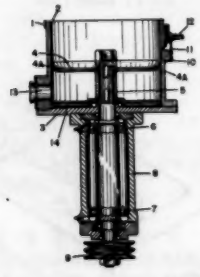
A frame for producing casting flasks is provided with pin-and-socket means for locating fixedly within the frame a model to be impressed within a flask.

3,741,702
APPARATUS FOR PRESSURE ROLLING SOAPS AND SIMILAR PRODUCTS
Carl Mazzoni, Via Ippolito Nievo 3, Busto Arsizio, Italy
Filed Mar. 8, 1971, Ser. No. 121,801
Claims priority, application Italy, Mar. 14, 1970, 21,955 A/70
Int. Cl. C11d *13/10*
U.S. Cl. 425—201 **6 Claims**



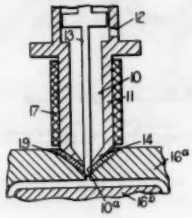
Apparatus for refining soap and similar products wherein the paste is extruded into a pressure chamber from which it is urged between two rolling rolls of different peripheral speed which cause said paste to be mixed and pulped, assuring a high degree of refining by a single rolling traverse.

3,741,703
APPARATUS FOR MAKING SPHERICAL GRANULES
Anthony Desmond Reynolds, London, England, assignor to Lilly Industries Limited, London, England
Filed Apr. 26, 1971, Ser. No. 137,291
Int. Cl. B29c *23/00*
U.S. Cl. 425—222 **3 Claims**



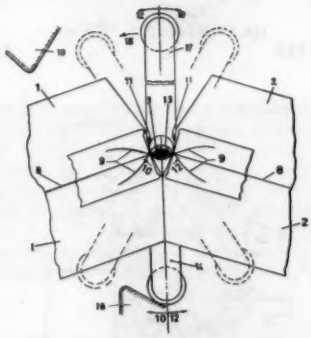
An improvement to an apparatus for making spherical granules from extrusions of wet plastic solid material comprising incorporating into said apparatus a rotatable frictional plate having the peripheral portion turned upwardly as it extends radially outwardly toward the encircling container wall.

3,741,704
APPARATUS FOR HOT RUNNER INJECTION MOULDING
Maurice Trevor Beasley, Nuneaton, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Dec. 10, 1970, Ser. No. 96,953
Claims priority, application Great Britain, Dec. 11, 1969, 60,502/69
Int. Cl. B29f *1/03*
U.S. Cl. 425—245 **4 Claims**



Apparatus for hot runner injection moulding includes a plunger reciprocable in a bore to inject molten synthetic resin material from a nozzle portion of the bore in a die cavity difining the shape of the article to be produced. Further the apparatus includes means thermally insulating the nozzle portion of the bore from the die when the apparatus is in use with the nozzle portion in position adjacent the die cavity.

3,741,705
TRIMMING APPARATUS FOR ROTARY EXTENSION BLOW-MOLDING MACHINES
Marcel Duikers, La Hulpe, Belgium, assignor to Solvay & Cie., Brussels, Belgium
Filed Mar. 9, 1971, Ser. No. 122,417
Claims priority, application Belgium, Mar. 12, 1970, 86300
Int. Cl. B29c *17/10*
U.S. Cl. 425—311 **6 Claims**



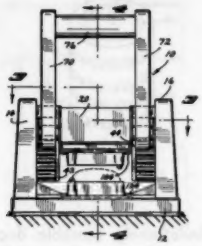
Apparatus for trimming unwanted material from between two sets of molds of a rotary machine for carrying out a process of extrusion blow-molding of hollow articles from a synthetic resin material has a double-edge blade, each cutting edge of which is arranged adjacent the bottom of a respective mold and oriented parallel to the closing plane thereof when the blade is in an inoperative position. The blade is mounted for pivotal movement about an axis parallel to the edges. Means are provided for pivoting the blade first in one rotational direction and then in the opposite rotation direction through an angle in each instance sufficient for shearing through unwanted material extending from the mold by coaction with the respective mold bottom.

3,741,706

TOY MOLDING DEVICE

Dwain Dennis Conley, and Jack Lewis Lemkin, both of Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.

Filed Jan. 26, 1972, Ser. No. 220,826
Int. Cl. B29c 3/00
U.S. Cl. 425—406 12 Claims



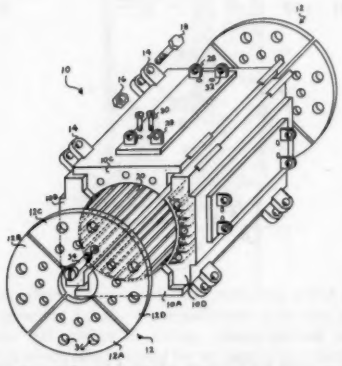
A molding device for forming a shaped object from a soft moldable material. The device includes at least one die having a mold cavity which cooperates with a second die or a forming plate, to form a three-dimensional object. By manipulating a handle assembly which forms a part of the device, the moldable material is forced into the mold cavity(ies), so that such material assumes the shape of the mold cavity.

3,741,707

DISMEMBERABLE MOLD FOR CENTRIFUGALLY CASTING FINNED STRUCTURES

Frederick W. Baumann; William C. La Bahn, both of Scotia; Robert G. MacNary, Elnora, and Albert R. Miller, Albany, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,286
Int. Cl. B29c 5/04
U.S. Cl. 425—435 13 Claims



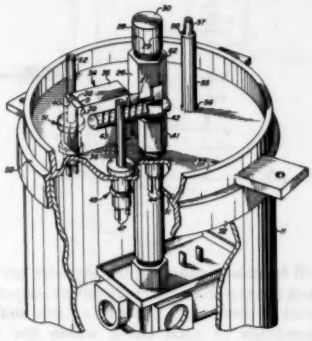
Finned motor frames above 10 inches in diameter are centrifugally cast utilizing a mold formed of four individual cast iron sections each having approximately a quadrant of an enlarged annular plate secured at opposite ends thereof to provide circular wheels for rotation of the mold. The quadrants of the plate, in association with orthogonal seating surfaces at the edges of the mold sections, provide coarse centering of the mold sections as the sections are assembled while fine centering of the sections to produce a smooth circumferential edge on the plate is achieved by tightening bolts extending orthogonally through eyelets protruding substantially radially outward at the edges of each mold section. Brackets also are provided along the exterior surface of each mold section to strip the mold from the cast motor frame by the application of lateral force to the brackets.

3,741,708

AUTOMATIC GAS TORCH

Bernard J. Bernstein, 1320 East Nicolet, Phoenix, Ariz.

Filed Mar. 16, 1972, Ser. No. 235,131
Int. Cl. F23n 5/02
U.S. Cl. 431—28 6 Claims



This specification discloses an automatic gas torch comprising a cylindrical housing having a horizontal platform positioned in its upper end. A gas pipe extends upwardly through the housing and platform projecting above the latter. Included in the gas pipe is a valve operated by a bi-metallic element. The gas pipe is formed with a small lateral orifice above the platform and a burner having a plurality of lateral ports is mounted on the upper end of the pipe. A burner block is mounted on the platform in a radial position relative to the pipe and has a central passage that opens onto the orifice. It is also formed with openings on its side faces and top which communicate with the passage.

Mounted on the platform adjacent to the burner block is an electric igniter and two thermo-operated switches on opposite sides of the block. One of these switches is included in the circuit of the bi-metallic element of the valve and the other in the circuit of the igniter. The first switch is normally open and the second, normally closed. When a main control switch is closed, the circuit to the igniter is completed and the igniter reaches a high temperature. The heat from the igniter is effective on the first thermo-switch to close it and complete the circuit through the bi-metallic element. As the latter heats to a required degree, the valve is opened and gas flows through the pipe. Some of this gas is emitted from the lateral orifice and enters the passage in the burner block and emerges from the openings in the block. Emerging gas from one opening is ignited by the igniter and the flame travels about the block to ignite the gas emerging from the other openings. The flame of one jet of gas heats the second thermo-switch to open it and interrupt the circuit to the igniter. The flame of the opposite jet heats the first thermo-switch to maintain the circuit to the bi-metallic element closed and the valve open. The flame from the top opening ignites the gas emerging from the burner ports.

3,741,709

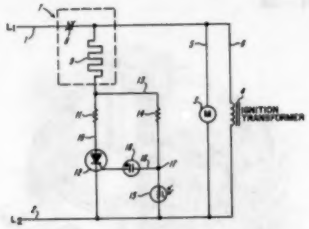
SOLID STATE SAFETY CONTROL FOR FUEL BURNING APPARATUS

Loris D. Clark, Syracuse, Ind., assignor to Koehring Company, Milwaukee, Wis.

Filed Jan. 11, 1972, Ser. No. 217,003
Int. Cl. F23n 5/08
U.S. Cl. 431—79 12 Claims

A solid state flame sensing control circuit for a fuel burning device incorporates a thermal sensitive circuit breaker, a heat-

ing coil to energize the circuit breaker, a variable resistance device arranged to monitor and respond to a given physical condition or absence of the flame of the fuel burning device and a thyrister type unit which when energized permits sufficient current to pass through the heating coil to trip the circuit breaker. The elements are so connected that as long as the variable resistance device senses a proper flame condition the



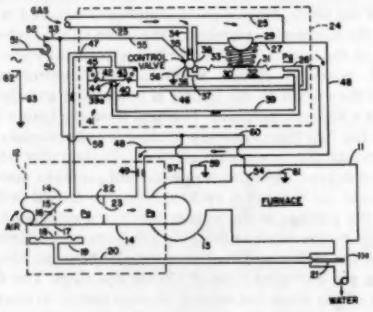
thyrister will be non-conductive; the thyrister becoming conductive when the variable resistance device, dependent on its nature, senses an absence of flame or a flame shift, or a temperature condition of such flame within the combustion chamber of the fuel burning device indicative of an absence of or improper burning. In preferred embodiment means are also provided to render the circuit insensitive to normal flame flicker.

3,741,710

COMBUSTION CONTROL VALVE MEANS AND SYSTEM

Lorne W. Nelson, 10118 Dupont Avenue South, Bloomington, Minn.

Filed Dec. 20, 1971, Ser. No. 209,793
Int. Cl. F23n 1/02
U.S. Cl. 431—90 **10 Claims**



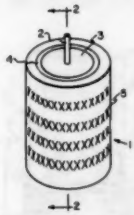
Combination control apparatus including means for supplying air to a furnace, means for supplying gas to the furnace, means responsive to heat demand for varying the air flow and means responsive to the rate of air flow for adjusting the rate of gas flow to maintain a constant fuel/air ratio. Preferably, an air damper or valve is located in an air inlet pipe to a blower and a gas supply pipe is also connected to the inlet pipe adjacent the blower. The blower feeds the mixture into the furnace. A modulating-type pressure regulating valve controls the rate of gas flow and means responsive to air pressure, located between the air valve and the blower, adjusts the modulating valve to maintain an outlet pressure that provides a fuel/air ratio that is substantially constant.

3,741,711

COMPOSITE INDEFINITELY REUSABLE DECORATIVE CANDLE

Gladys Bryant, 1202 W. Nevada, Urbana, Ill.

Filed Mar. 27, 1972, Ser. No. 238,099
Int. Cl. F23q 2/32
U.S. Cl. 431—125 **9 Claims**



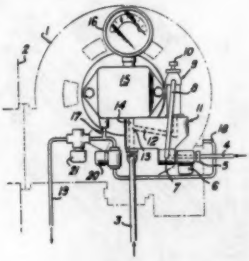
A composite indefinitely reusable decorative candle is formed of clear, undyed and unpigmented candle wax in any appropriate candle shape. The candle has surface ornamentation and coloration only. The candle is provided with a glass cylinder recessed centrally thereof and a cylinder of translucent insulating material, such as styrofoam, positioned just inside the glass cylinder. These cylinders are positioned to provide a recess into which there is fitted a glass transparent cup having a small cylindrical candle which may be replaced periodically after it is used up. The candle is characterized by a decorative effect, indefinite reusability, and a luminescent glow throughout the body of the candle and concentrated on the decorative surface thereof when a candle is being burned.

3,741,712

SUPPLY SYSTEM FOR A LIGHT HYROCARBON-WATER EMULSION BURNER

Claude Delatronchette, Cachan, France, assignor to Elf-Union S.A., Paris, France

Filed Dec. 1, 1971, Ser. No. 203,756
Int. Cl. F23l 7/00
U.S. Cl. 431—190 **3 Claims**

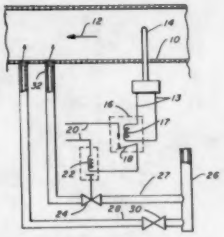


A supply system for burners adapted to consume an emulsion with water of light hydrocarbons, such as domestic fuel-oil for example, comprises in known manner, a water-supply intake, a hydrocarbon supply, a mixer for water and fuel, a high-pressure pump for sending said emusion through an injection circuit to the injector of said burner, said supply system further comprising a dosing device for the injected water located on the water-supply circuit to said mixer, a first electro-valve and a non-return valve arranged at the input of the water-supply circuit, in front of said dosing device, a second electrovalve on the injection circuit, and a branch circuit connected on the injection circuit between the outlet of said high-pressure pump and said second electro-valve, said branch circuit being provided with a third electro-valve.

3,741,713
PURGE GAS ADMISSION CONTROL FOR FLARE SYSTEM

Robert D. Reed, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Mar. 10, 1972, Ser. No. 233,536
Int. Cl. F23d 13/20
U.S. Cl. 431—202 10 Claims

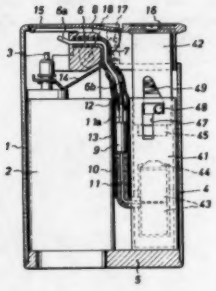


This invention describes a system for controlling the rate of flow of purge gas through a flare stack system as a function of the temperature of the gases inside of the flare stack.

3,741,714
PIEZOELECTRIC TYPE GAS LIGHTER

Sadao Yoshinaga, Tokyo, Japan, assignor to Prince Sangyo Kabushiki Kaisha, Tokyo, Japan

Filed July 22, 1971, Ser. No. 165,072
Claims priority, application Japan, July 27, 1970, 45/74177
Int. Cl. F23q 3/01
U.S. Cl. 431—255 3 Claims



A piezoelectric type gas lighter including a fuel tank having a fuel spouting nozzle, a piezoelectric unit, and a discharge electrode all within a casing, characterized in that the discharge electrode covered by an insulating coating except a tip thereof is fixed to an insulated supporting member, an insulated lead wire led out of piezoelectric elements included in the piezoelectric unit is removed its insulation at an end thereof, the rear end of the discharge electrode and the thus exposed forward end of the lead wire are electrically connected through a conductive sheath of a required length, and the thus connected portion of the lead wire and the discharge electrode is further protected by an insulating tubular body.

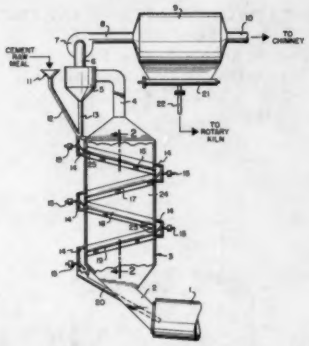
ERRATA

For Classes 432—11 and 432—146 see:
Patents Nos. 3,741,551 and 3,741,552

3,741,715
METHOD AND APPARATUS FOR PROVIDING HEAT EXCHANGE

Kerl Jens Sylvest, Copenhagen-Volby, Denmark, assignor to F.L. Smidth & Co., Cresskill, N.J.

Filed Feb. 16, 1972, Ser. No. 226,839
Claims priority, application Great Britain, Feb. 25, 1971, 5,452/71
Int. Cl. F27b 7/02
U.S. Cl. 432—16 20 Claims

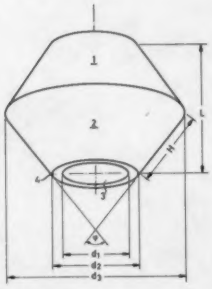


A method of and apparatus for transmitting heat between a powdered material and gas is disclosed. The material is fed to one end of a longitudinally inclined channel which includes a longitudinal opening in its bottom portion. The gas is caused to flow up through the bottom opening of the channel at a particular velocity so as to cause the gas to form eddies above the opening. These eddies entrain a majority of the material and move down along the inclined channel.

3,741,716
HEATER FOR USE IN THE MANUFACTURE OF PLASTICS FILAMENTS

Rudolf Johne, Haunstetten, and Max Bechter, Bobingen, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Mar. 28, 1972, Ser. No. 238,846
Claims priority, application Germany, Mar. 30, 1971, P 21 15 312.8
Int. Cl. F27b 9/28
U.S. Cl. 432—59 7 Claims



A heater for use in the manufacture of spun plastics filaments which comprises two portions each having a truncated

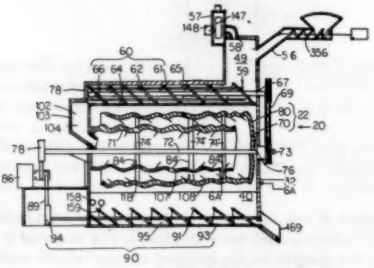
right polygonal pyramidal or truncated right conical internal surface that is open ended, the internal surface of one of the portions is heated while the internal surface of the other portion is themally reflective and at the smaller end of the heated portion a screen is arranged to reduce the effective area of the said smaller opening. With the use of the heater spun filaments can be produced having a low degree of preorientation and a satisfactory uniformity.

3,741,717

GRAIN TREATING APPARATUSES AND PROCESSES OF OPERATION THEREOF

Lloyd M. Triplett, Route 1, Claude, Tex.

Filed Dec. 27, 1971, Ser. No. 212,131
Int. Cl. F27b *7/00*
U.S. Cl. 432—105 **5 Claims**



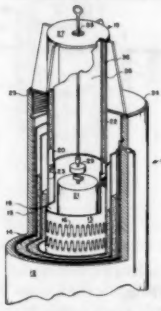
A shell assembly, an agitating and transport drum assembly and a heating assembly adjusted to a non-oxidizing flame provide inexpensive yet reliable and safe grain drying: a multi-element scooped drum assembly provides improved contact of the heating gases and the solid particulate material.

3,741,718

APPARATUS FOR LOADING A HIGH-PRESSURE FURNACE

Charles B. Boyer, Columbus; Franklin D. Orcutt, Galloway; Robert L. Shaw, Columbus, and Galen C. Gregg, West Jefferson, all of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Oct. 5, 1971, Ser. No. 186,607
Int. Cl. F27b *14/00*; **F27d** *3/00*
U.S. Cl. 432—253 **5 Claims**



A method and apparatus that decrease the time normally used in a high-pressure, high-temperature furnace for heating a material to be treated to a desired temperature prior to treatment and cooling that material to low temperatures after the treatment. The material is heated prior to insertion into the furnace and held within a thermally insulated container having a means of communicating with the hot zone of the furnace until insertion is desired and the normal treatment carried out. Subsequent to the treatment the material is again placed within the container and allowed to cool or possibly subjected to further thermal treatments within the container. The use of this holding apparatus allows greater utilization of the high-pressure, high-temperature furnace by freeing it from the function of routine heating and cooling of the treated materials.

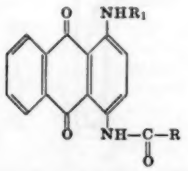
CHEMICAL

3,741,719
ACIDIC DISPERSE DYESTUFF PREPARATION
Visvanathan Ramanathan, Basel, and Hans Wilhelm Liechti, Oberwil, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Continuation of abandoned application Ser. No. 778,766, Nov. 25, 1968. This application July 15, 1971, Ser. No. 163,085
Int. Cl. D06p *1/18, 1/20, 1/68*
U.S. Cl. 8—39 13 Claims

A dyestuff preparation which contains (1) a disperse dyestuff free from sulphonic acid and carboxyl groups which is at least partially protonated and which contains at least one non-quaternary basic nitrogen atom, (2) a non-cationic emulsifier, (3) an amount of acid which is at least equivalent to the basic nitrogen atoms present in the dyestuff, and, if desired, (4) a non-protonatable solvent miscible with water.

3,741,720
PROCESS FOR THE CONTINUOUS DYEING OF POLYESTER FIBERS
Volker Hederich and Gunter Gehrke, Cologne, and Rutger Neeff, Leverkusen, Germany (all % Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany)
No Drawing. Filed Oct. 12, 1970, Ser. No. 79,717
Int. Cl. D06p *1/20*
U.S. Cl. 8—39 8 Claims

The continuous dyeing of synthetic fibre materials from organic solvents. The fibre materials are impregnated with dye liquors which contain anthraquinone dyestuffs of the formula

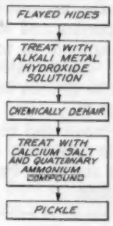


in which R represents a C_1–C_{17}-alkyl radical, an aralkyl or optionally substituted aryl radical and R_1 stands for an alkyl radical which may be substituted by alkoxy or alkylamino groups, for a cycloalkyl, aralkyl or for an optionally substituted aryl radical, and subsequently subjected to a heat treatment.

3,741,721
AFTER-FIXING DYES WITH MONOAMINOALKYL-SILICONES WITH AMINOALKYL CHAINS HAVING 3 CARBON ATOMS
Domenick D. Gagliardi, East Greenwich, R.I., assignor to Union Carbide Corporation
No Drawing. Continuation of application Ser. No. 804,882, Apr. 8, 1959. This application Feb. 4, 1965, Ser. No. 430,478
Int. Cl. D06p *5/02*
U.S. Cl. 8—74 18 Claims

In a process for improving the fastness of dyeings and prints on previously dyed and printed printed substrata such substrata having been dyed and printed with water-soluble direct dyestuffs, the improvement that comprises after-treating the substrate to deposit thereon a coating of a dye-fixative selected from the group consisting of aminoalkyl silicones and metal coordinated complexes of the same selected from the group consisting of monomeric aminoalkylsilanes, aminoalkylpolysiloxanes, copolymers of aminoalkylpolysiloxanes with at least one other polysiloxane, blends of aminoalkylpolysiloxanes with at least one other polysiloxane and metal coordinated complexes of such aminoalkyl silicones, such aminoalkyl silicone coloring assistant containing at least one amino substituent wherein the nitrogen atom of the amino group is connected to a silicon atom of the silicone directly through a divalent hydrocarbon radical and the amino nitrogen is separated by at least three carbon atoms from the silicon atom.

3,741,722
CURING AND PRETANNAGE OF HIDES
Don S. Elvrum, 6233 Saylin Lane, Annandale, Los Angeles, Calif. 90042
Original application July 19, 1967, Ser. No. 654,432, now Patent No. 3,574,517, dated Apr. 13, 1971. Divided and this application July 2, 1970, Ser. No. 51,861
Int. Cl. C14c *1/02, 1/06, 1/08*
U.S. Cl. 8—94.16 15 Claims



Hides may be cured and pretanned by: treating raw hides with a sodium hydroxide solution so as to react the lipid material in order to cause formation of soaps, limited attack on protein material present in the hides, and swelling of the collagen in the hides; adding sodium chloride to the sodium hydroxide solution in order to enable this salt to be taken up from the solution by the hides, causing an increase in the strength of the swollen collagen; dehairing the hides; treating the hides with sodium sulphite solution so as to add strength to the swollen collagen; treating the hides with a mixture of a quaternary ammonium salt, and a calcium salt in order to precipitate any soaps present and to place the ammonium salt within the remaining hide material and to separate fascia tissue from the remaining hide material; and pickling the hides with an acid solution so as to effect a size reduction and strengthening of the swollen collagen. If desired, the hides may be bated prior to being pickled. The so-cured hides have properties which are related to the properties of the ammonium salt. The resulting hides can be further treated in accordance with conventional tanning practices.

3,741,723
TREATING KERATINIC FIBERS WITH POLYSULFHYDRYLATED POLYMERS
Gregoire Kalopissis, Paris, France, assignor to L'Oreal, Paris, France
No Drawing. Continuation-in-part of application Ser. No. 633,372, Apr. 25, 1967, which is a continuation-in-part of abandoned application Ser. No. 565,371, July 15, 1966, which is a continuation-in-part of application Ser. No. 520,075, Jan. 12, 1966, which is a continuation-in-part of abandoned application Ser. No. 463,890, June 14, 1965, which is a continuation-in-part of application Ser. No. 463,953, June 14, 1965, which in turn is a continuation-in-part of abandoned application Ser. No. 267,851, Mar. 25, 1963. This application Feb. 4, 1971, Ser. No. 112,759
Int. Cl. D06m *3/10*
U.S. Cl. 8—127.51 8 Claims

A process of treating keratinic fibers with polysulfhydrylated polymers to improve the mechanical properties

of said fibers and polysulfhydrylated polymer compositions used in said treatment.

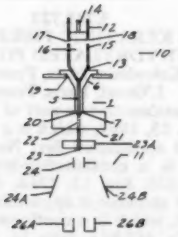
3,741,724
APERTURED NONWOVEN FABRICS AND METHODS OF MAKING THE SAME
Carlyle Harmon, Scotch Plains, N.J., assignor to Johnson & Johnson
No Drawing. Filed Jan. 5, 1971, Ser. No. 104,174
Int. Cl. B29c *23/00;* **D04h** *11/00*
U.S. Cl. 8—115.5 **3 Claims**

Apertured nonwoven textile fabrics comprising polyvinyl alcohol fibers and having a predetermined pattern of fabric apertures and fiber bundles created by applied fluid forces; and methods of making the same which comprises: chemically treating and modifying heat-sensitive, water-soluble polyvinyl alcohol fibers to (a) raise their wet softening temperature whereby they are essentially wet heat-insensitive up to a temperature of at least about 150° C. and (b) give them an average degree of acetalization of from about 20 mol percent to about 35 mol percent whereby they develop the necessary balance of hydrophobic-hydrophilic properties and are sufficiently water-insensitive and water-insoluble as to be capable of controlled movement and manipulation by applied fluid forces; forming a cohesive fibrous web from said heat-insensitive, water-insoluble fibers; and applying fluid forces to said fibrous web to move and rearrange said heat-insensitive, water-insoluble fibers into a predetermined pattern of fabric apertures and fiber bundles constituting an apertured nonwoven fabric.

3,741,725
CATALYTIC CONTROL OF AUTO EXHAUST EMISSIONS
James R. Graham, 5259 Hayledge Court, Columbia, Md. 21043
Filed Aug. 12, 1971, Ser. No. 171,151
Int. Cl. B01d *53/00*
U.S. Cl. 423—213 **4 Claims**

A platinum catalyst system is described which is effective in removing NO_x from auto exhaust emissions in a three-bed system in which the NO_x is reduced in the first bed, the hydrocarbons and carbon monoxide are partially oxidized in the second bed and the hydrocarbon and carbon monoxide oxidation is completed in the third bed.

3,741,726
APPARATUS FOR COLLECTING AND DISPENSING LIQUIDS AND FOR PARTICLE COUNTING
Douglas Graham Mitchell, 31 Scotch Pine Drive, Voorheesville, N.Y. 12186, and Leonard Adler, 14 Oakley Road, White Plains, N.Y. 10606
Filed Aug. 9, 1971, Ser. No. 169,984
Int. Cl. B04b *9/12;* **G01d** *15/18;* **G01n** *31/02*
U.S. Cl. 23—230 R **6 Claims**



Method and apparatus for collecting analytical samples, particularly blood samples, for centrifuging these samples and separating them into two or more fractions and for dispensing the sample or sample fraction into two or more aliquots comprising a sample collector in the form of a body means having generally central capillary tubing which is generally separable into two or more parts, one of which can be manually or automatically fitted as an integral part of tubing which feeds liquid including sample or sample fraction to a drop generator means wherein sample or sample fraction is dispensed into one or more aliquots. Means are also provided for incorporating this sample dispensing system in apparatus for chemical analysis by molecular absorption spectroscopy, molecular fluorescence spectroscopy, and other analytical techniques. Means are also provided to enable a sample to be diluted or reacted as necessary with diluent or reagent preferably using drop generator means and dispensed as a stream of drops preferably of much smaller diameter than the diameter of the drop generator means and passed through particle counting and separating means for accurate particle counting and separating.

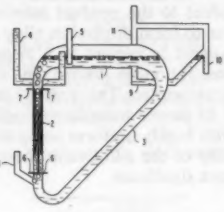
3,741,727
ARSENIC SAMPLER
Howard L. Stroterhoff, Baltimore, Md., assignor to the United States of America as represented by the Secretary of the Army
Filed Feb. 4, 1972, Ser. No. 223,513
Int. Cl. G01n *31/22, 33/18*
U.S. Cl. 23—230 R **9 Claims**

An apparatus and method to indicate the presence of arsenicals in water whereby a sample of water is taken into a clear and flexible plastic tube; a cap having a detection paper impregnated with a mercuric salt mounted in the cap is inserted on to the plastic tube to retain the water sample therein; a sealed thin wall glass ampule fixedly retained in the plastic tube is broken by squeezing the plastic tube at the ampule location and with the ampule between the fingers to release to the water sample a mixture of potassium bisulfate and cupric sulfate contained in the ampule to react with the water sample and any arsenical material therein and a zinc strip within the plastic tube; and any arsenical material present in the water being detected by a yellow to brown color imparted to the detection paper upon reaction of the mercuric salt therein with arsine produced upon release of the ampule contents to the water sample.

3,741,728
PROCESS AND APPARATUS FOR THE CONTINUOUS DETERMINATION OF WATER IN GASES
Eberhard Sistig, Marl, and Karl-Heinz Reinermann, Dulmen, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany
Filed Jan. 24, 1972, Ser. No. 219,947
Claims priority, application Germany, Jan. 23, 1971, P 21 03 089.7
Int. Cl. B01k *3/00;* **G01n** *31/16*
U.S. Cl. 23—232 E **7 Claims**

Process for conducting a continuous water determination in gases with the aid of coulometric titration accord-

ing to the "dead-stop" method with Karl Fischer reagent, which comprises effecting circulatory motion of the titration liquid in a closed titration system by continuously



supplying an anhydrous gas containing at least 5% by volume of oxygen to the titration liquid, the titration system having a closed loop-like configuration.

3,741,729

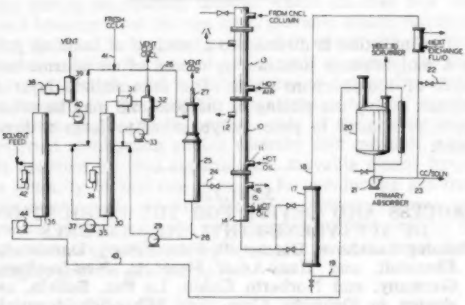
APPARATUS FOR PRODUCING A SOLUTION OF CYANURIC CHLORIDE FROM GASEOUS CYANURIC CHLORIDE

William J. Evers and Philip G. McCracken, Mobile, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Application Jan. 29, 1968, Ser. No. 701,352, which is a continuation-in-part of abandoned application Ser. No. 616,877, Feb. 17, 1967. Divided and this application Mar. 26, 1970, Ser. No. 30,614

Int. Cl. B01d *11/04, 3/14;* **C07d** *55/42*

U.S. Cl. 23—267 R **3 Claims**



Gaseous cyanuric chloride from a trimerizer is passed into a condenser where it is condensed to a liquid and the condensate is held at an elevated temperature in a pot while the gases are flashed off. Thereafter, the liquid is absorbed in a first solvent in a primary absorption system. The flashed off gases are contacted with a different solvent, the materials other than cyanuric chloride are removed from the solution, and the cyanuric chloride is then transferred to the first solvent and the resulting solution mixed with the solution in the primary absorption system.

3,741,730

EXHAUST COMBUSTION SYSTEM

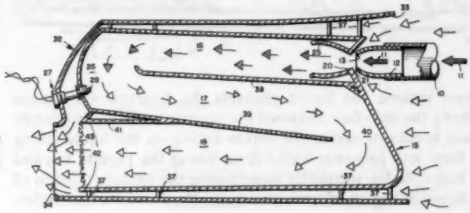
Frederick S. Alcott, 8436 Kedvale Ave., Skokie, Ill. 60076

Filed Jan. 3, 1972, Ser. No. 214,686

Int. Cl. F01n *3/14*

U.S. Cl. 23—277 C **5 Claims**

Devices disclosed for inclusion in the exhaust system of a vehicle to achieve a more complete combustion of the exhaust gases prior to admitting them to the atmosphere. The device includes an inlet venturi which receives the exhaust gases from a vehicle's engine and also draws in fresh air for mixing with the exhaust gases. The device includes an inner labyrinth-chamber defining member and an outer shell separated by a corrugated steel spacer. Atmospheric air is forced through the space between the outer shell and the labyrinth by the motion of the vehicle for cooling. The labyrinth defines a series of interconnected chambers of increasing cross sectional area, the first of which extends longitudinally of the device and



passes the exhaust gases mixed with fresh air adjacent a spark plug which periodically ignites the passing mixture. A second chamber passes the ignited gases in counter current with respect to the first chamber and into a third expanding chamber in which the direction of flow is again reversed. The cooling air encompassing the labyrinth mixes with the final exhaust gas from the third expansion chamber which passes through a flame screen.

3,741,731

EXTRACTION OF BORON FROM AQUEOUS SOLUTIONS WITH SALICYLIC ACID DERIVATIVES

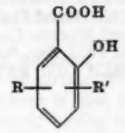
Willard D. Peterson, Pasadena, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,904

Int. Cl. B01j *9/04*

U.S. Cl. 23—312 R **13 Claims**

A process for extracting boron values from aqueous boron containing solutions by contacting the aqueous solution with a substantially water immiscible solvent containing a substantially water immiscible nuclear-substituted salicylic acid having the formula



and salts thereof wherein R and R' are selected from the group consisting of hydrogen, halogen, alkyl, aryl, alkaryl, and cycloalkyl groups having sufficient carbon atoms that the salicylic acid derivatives has at least 11 carbon atoms. Preferably R is selected from the group consisting of alkyl, alkaryl, cycloalkyl, and aryl radicals having at least three carbon atoms and R' is selected from the group consisting of hydrogen, halogen and alkyl groups. The boron is sequestered by the salicylic acid derivative and thereby is extracted from the aqueous phase into the organic phase.

3,741,732

FRACTIONAL-FILL PIPETTE ASSEMBLY

Trevelyan A. Stanfield, Nutley, N.J., assignor to Becon, Dickinson and Company, East Rutherford, N.J.

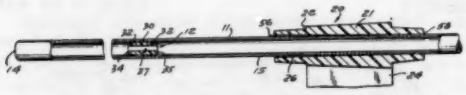
Filed May 18, 1972, Ser. No. 254,764

Int. Cl. B01l *3/02*

U.S. Cl. 73—425.4 P **7 Claims**

A fractional-fill pipette assembly adapted to fill to a predetermined mark to obtain a desired known volume of

liquid such as blood, plasma, test reagents or the like is disclosed. A means formed of a hydrophobic material is positioned within the tube bore, a predetermined distance from one end thereof so as to divide the capillary tube into two segments, one of the segments having a precise known volumetric capacity for collecting a desired known volume of liquid so that when the liquid fills the segment containing the precise



known volume the liquid contacts the hydrophobic means defining the interface between the segments, the hydrophobic means breaks or resists the forces acting on the liquid filling the bore and prevents liquid from filling the pipette beyond the hydrophobic means by maintaining the surface tension of the liquid at the interface between the fluid and the hydrophobic means.

3,741,733

SINTERED HARD ALLOY AND METHOD OF MAKING

Richard Kieffer, Vienna, Austria, assignor to Ugine-Carbone, Paris, France

No Drawing. Filed Sept. 29, 1970, Ser. No. 76,637
Claims priority, application Austria, Sept. 30, 1969, A 9,227/69
Int. Cl. B22f *3/12*
U.S. Cl. 29—182.5 **6 Claims**

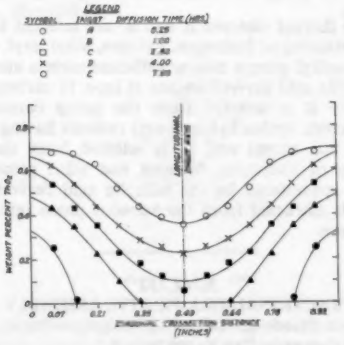
A sintered hard metal alloy useful as a cutting tool bit and a process of making same comprising a metallic hard material phase having a nitrogen base and comprising nitrides or nitride-carbide mixtures or carbonitrides or mixtures thereof, preferably with metals of the transition metal Groups IV*a* and V*a* of the periodic table. The hard material phase is bonded by an auxiliary alloy phase comprising a mixture of metals from the iron group metals and from the chromium group metals.

3,741,734

METAL PRODUCTS AND PROCESS OF PREPARATION

Thomas E. Dunham, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Oct. 4, 1971, Ser. No. 186,143
Int. Cl. B22f *7/00*; B05c *3/02*
U.S. Cl. 29—182.5 **23 Claims**



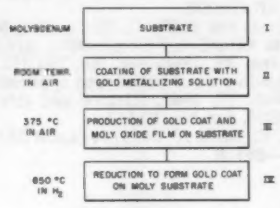
A liquid diffusion technique is described which enables fabrication of various metallurgical products having a compositional gradient which diminishes continuously with increasing distance from the exterior surfaces of the particular product. More particularly, the products obtained by said technique have a predominant matrix of a base metallic composition in which is dispersed an additive metal or metal composition with the additive concentration being uniformly less with direction from the surface of the product to the product interior. It is possible by said technique to form dispersion alloy products wherein the alloying agent is present in a dispersed phase and the alloy concentration is varied in accordance with liquid diffusion principles. The present technique is particularly useful in power metallurgy applications to provide products with highly uniform compositional gradients when the solubilty of the additive in the particular matrix composition is not significant.

3,741,735

COATING MOLYBDENUM WITH PURE GOLD

Robert L. Buttle, Summit, N.J., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 8, 1964, Ser. No. 336,605
Int. Cl. C23c *13/02*
U.S. Cl. 29—198 **6 Claims**



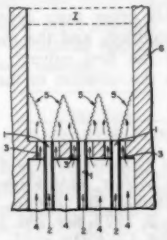
The invention is directed to a method of bonding gold to a molybdenum substrate by means of an intermediate layer of molybdenum oxide. The intermediate layer is formed during the plating of the gold and may be subsequently reduced to pure molybdenum to form a direct bond.

3,741,736

PROCESS AND DEVICE FOR THE PRODUCTION OF ACETYLENE-ETHYLENE MIXTURES

Henning Bockhorn, Darmstadt, Fritz Fetting, Darmstadt-Eberstadt, and Hans-Adolf Herbertz, Neu-Isenburg, Germany, and Norberto Galdo, La Paz, Bolivia, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Oct. 26, 1971, Ser. No. 192,605
Claims priority, application Germany, Oct. 27, 1970, P 20 52 543.3
Int. Cl. C10j *19/00*; C07c *11/24*
U.S. Cl. 48—113 **10 Claims**

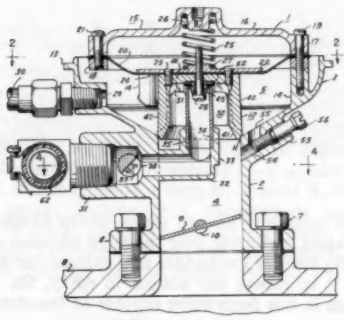


A process for the production of acetylene-ethylene mixtures by mixing at least one light saturated hydrocarbon with oxygen or an oxygen containing gas to form a first mixture, and reacting the first mixture in a flame reaction wherein the improvement comprises reacting the

hydrocarbon with the oxygen or oxygen containing gas in a diffusion flame to form a second mixture containing acetylene and ethylene. A device for carrying out the process is provided.

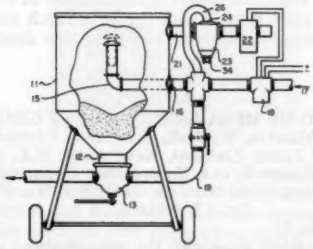
3,741,737
GAS CARBURETOR
Sam P. Jones, Dallas, Tex., assignor to J & S Carburetor Company, Dallas, Tex.
Filed May 6, 1971, Ser. No. 140,688
Int. Cl. F02m 7/18, 9/12
U.S. Cl. 48—180 C 9 Claims

A carburetor for mixing air with natural or liquefied



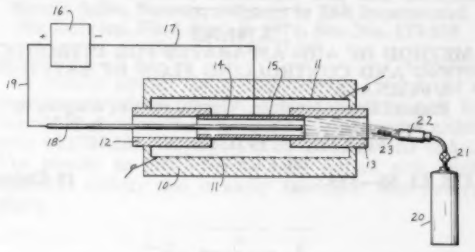
petroleum gas comprising a housing having air and gas inlets and a common outlet, fixed means within the housing having an opening through which gas may flow into said housing from the gas inlet, movable means surrounding the fixed means and arranged to coact with its opening to control the flow of gas as well as control the flow of air through said housing, pressure responsive means connected to the movable means with one side exposed to atmosphere and its opposite side of the suction of an internal combustion engine whereby said movable means is actuated by said suction, said movable means having a plurality of separate passages for conducting gas from the opening of said fixed means in separate streams, and means aligned with the passages for impingement by the gas streams to disperse said streams so as to more thoroughly mix the air and gas.

3,741,738
ABRASIVE BLASTING EQUIPMENT AND SELF-CLEANING ABRASIVE TRAP THEREFORE
Robert V. Dowgin, Wayne, N.J., assignor to Pauli & Griffin Co., San Fransisco, Calif.
Filed Apr. 12, 1971, Ser. No. 133,014
Int. Cl. B24c 7/00
U.S. Cl. 51—12 5 Claims



Abrasive blasting equipment of the type where the tank is depressurized to stop blasting having a self-cleaning abrasive trap interposed between the tank and the exhaust valve to protect the valve from wear by abrasive entrained in the exhaust stream.

3,741,739
METHOD OF STRENGTHENING GLASS
Theodore C. Baker, Wayne, Ohio, assignor to Owens-Illinois, Inc.
Continuation of application Ser. No. 678,034, Oct. 25, 1967. This application July 7, 1970, Ser. No. 56,153
Int. Cl. C03b 5/26, 25/00
U.S. Cl. 65—30 8 Claims



A method for electrochemically tempering an alkali silicate glass article by an ion exchange process wherein larger alkali ions from an electrically conductive, gaseous medium are exchanged for the alkali ions present in the surface of the glass article.

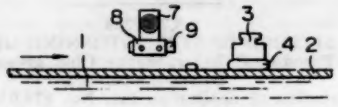
3,741,740
GLASS-CERAMIC HAVING A REFLECTIVE SURFACE AND PROCESS FOR MAKING SAME
Perry P. Pirooz, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Dec. 6, 1971, Ser. No. 205,354
Int. Cl. C03c 29/00
U.S. Cl. 65—32 10 Claims

A glass composition capable of being thermally in situ crystallized to a glass-ceramic having a highly reflective integral surface film, which surface film is resistant to high temperatures, to chemical corrosion and to abrasion, said composition consisting essentially of a SiO_2-Al_2O_3-Li_2O-Fe_2O_3 base glass containing a nucleating agent. The base glass contains a sufficient amount of Fe_2O_3 to produce a highly reflective surface film on the glass-ceramic formed therefrom. There is also provided a process for preparing a glass-ceramic having such a highly reflective surface film. The glass-ceramic of the invention is particularly useful for lining the interior of cooking and baking ovens and, when the glass-ceramic is a flat plate of a few microns thickness with opposite reflective surfaces, it can be used to split light beams by selective transmittance and reflection.

3,741,741
PROCESS AND APPARATUS FOR THE PREPARATION OF SURFACE-MODIFIED GLASS RIBBON
Nobuyoshi Ohsato, Maizuru, Japan, assignor to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Filed Aug. 17, 1970, Ser. No. 64,369
Claims priority, application Japan, Aug. 18, 1969, 44/65,209
Int. Cl. C03b 19/02
U.S. Cl. 65—99 A 5 Claims

This invention provides as improvement of the process for preparing a glass ribbon having modified properties by contacting the surface of a glass ribbon running continuously on a bath of molten metal with a glass-modifying molten alloy, and this improvement is characterized

in that a molten alloy containing a glass surface-modifying metal in a maximum content is fed onto the surface



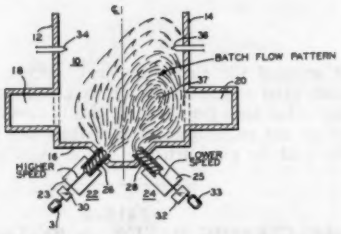
of the glass ribbon flowing continuosly on the bath of molten metal.

3,741,742

METHOD OF AND APPARATUS FOR INTRODUCING AND CONTROLLING FLOW OF BATCH IN A FURNACE

Richard Frank Jennings, Vienna, W. Va., assignor to Johns-Manville Corporation, New York, N.Y.

Filed July 19, 1971, Ser. No. 163,867
Int. Cl. C03b *5/24*
U.S. Cl. 65—135 **19 Claims**



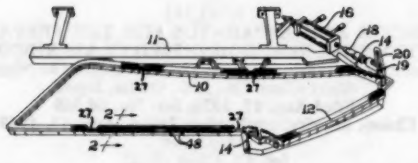
A method of and apparatus for processing heat softenable, inorganic batch material to maintain a homogenous and a constant temperature mass of material in the melter section of a furnace of the continuous melting type. Batch introduction is directionalized to cause it to move transverse of the longitudinal axis of the furnace from a cooler to a hotter section of the furnace and effectively cool that section. This retards the advance of the batch out of the melting zone toward the refiner and forehearth by tending to enhance circulation in the melt by convection.

3,741,743

GLASS SHEET SHAPING FRAME

Samuel L. Seymour, 26 Crystal Drive, Oakmont, Pa.

Continuation-in-part of Ser. No. 83,935, Oct. 26, 1970, abandoned. This application July 31, 1972, Ser. No. 276,877
Int. Cl. C03b *23/02*
U.S. Cl. 65—287 **12 Claims**



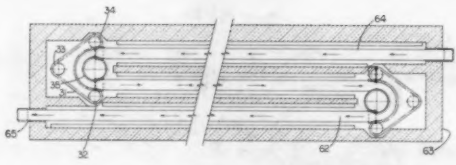
A shaping frame for engaging the peripheral portion of a glass sheet during shaping and tempering comprising a rigid reinforcing member aligned in offset relation to the margin of the glass sheet treated and screen means to space said glass sheet from said rigid reinforcing member, said screen means preferably comprising a heavy wire mesh supported on the rigid reinforcing member and a fine wire mesh that contacts the glass supported in spaced relation to said rigid reinforcing member by the heavy wire mesh.

3,741,744

APPARATUS FOR ANNEALING, CONVEYING, TRANSFERRING, AND SPRAYING GLASSWARE

Edward W. Bowman, Uniontown, Pa., assignor to E. W. Bowman, Incorporated, Uniontown, Pa.

Filed Nov. 24, 1971, Ser. No. 201,890
Int. Cl. C03b *25/04*
U.S. Cl. 65—348 **10 Claims**



A glass annealing lehr to which newly formed glassware is passed under and over sprays of abrasion resistant material by transfer mechanism that engages the ware and suspends it to expose the bottom to spray, the transfer mechanism in one form being capable of transferring the ware from one conveyor to another moving in opposite directions out of contact with said conveyors during the transfer movement.

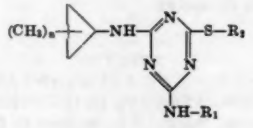
3,741,745

HERBICIDAL 2-ALKYTHIO-4,6-DIAMINO-s-TRIAZINES

Dagmar Berrer, Riechen, and Christian Vogel, Binningen, near Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Mar. 14, 1969, Ser. No. 807,429, now Patent No. 3,629,256. Divided and this application Apr. 9, 1971, Ser. No. 132,878
Int. Cl. A01n *9/22*
U.S. Cl. 71—93 **6 Claims**

2-alkylthio-triazine derivatives of the formula



wherein n means 0 or 1, R_1 represents certain unsubstituted or substituted alkyl or cycloalkyl groups and R_2 represents methyl or ethyl are disclosed as herbicidally active compounds of enhanced toxicity to undesirable plant growth and improved selectivity. A method of controlling undesirable plant growth with the aid of such compounds and compositions containing them are also described.

3,741,746

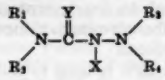
METHOD OF REGULATING PLANT GROWTH

Richard J. Marrese, Wyckoff, Gordon C. Edwards, Cranford, and James Zielinski, Kenilworth, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,144
Int. Cl. A01n *9/12*
U.S. Cl. 71—72 **4 Claims**

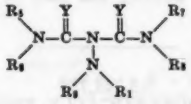
Semicarbazides, especially the tetraalkylated thiosemicarbazides and biuret derivatives, especially the mono- and dithiobiuret derivatives have demonstrated effective

growth regulating activity. Exemplary or preferred semicarbazides are those having the formula:



where R_1 and R_4 each represent an unsubstituted or substituted C_1–C_{30} hydrocarbyl group, preferably C_1–C_{10}, and X can be either hydrogen, said unsubstituted or substituted hydrocarbyl group, and Y can be O or S.

Exemplary of preferred biuret derivatives are those having the formula:



where R_5–R_{10} can be H, unsubstituted or substituted C_1–C_{30} hydrocarbyl group, preferably C_1–C_{10}, and Y can be O or S, and combinations thereof. Typical R_1–R_{10} hydrocarbyl groups include: (1) saturated or unsaturated, acyclic or cyclic, aliphatics such as, e.g., ethyl, propargyl, cyclohexyl, cyclohexenyl, etc.; and (2) aromatic or heteroaromatic radicals, such as phenyl, pyridyl, etc.

3,741,747

HIGHLY ALKALINE TITANATED CLEANER

Andrew Joseph Hamilton, Philadelphia, and George Schneider, Trevose, Pa., assignors to Amchem Products, Inc., Ambler, Pa.

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,409
Int. Cl. C23f 7/10
U.S. Cl. 148—6.15 Z 7 Claims

Alkaline cleaning, activating and grain-refining of ferrous and zinc surfaces in preparation for zinc phosphate coating is performed simultaneously with a single stabilized treating solution having a pH above 10 containing a colloidal titanium salt.

3,741,748

METAL DISPERSOID POWDER COMPOSITIONS

David A. W. Fustukian, Edmonton, Alberta; Leon F. Norris; Robert W. Fraser, both of Fort Saskatchewan, Alberta, and David John Ivor Evans, North Edmonton, Alberta, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Oct. 1, 1970, Ser. No. 77,217
Claims priority, application Canada, Jan. 27, 1970, 073,147
Int. Cl. B22f 9/00
U.S. Cl. 75—0.5 AC 9 Claims

A powder composition suitable for powder metallurgical preparation of high temperature resistant wrought metal and metal alloy products. The composition contains highly disseminated and uniformly spaced refractory dispersoid particles fixed to metallic host particles. The host particles are in the form of anisodimensional platelets of nickel, cobalt, iron or an alloy based on at least one of these metals. The platelets have a maximum thickness of about 1,000 millimicrons and a minimum width at least 5 times the thickness. The refractory dispersoid particles have a mean radius in the range of 2–20 millimicrons and are fixed in the planar surfaces of the platelets in a volume fraction of about 0.001 to 0.10.

3,741,749

METHOD FOR THE PREPARATION OF CHARGED CADMIUM-NICKEL POWDER AND BATTERY ELECTRODE POWDER MADE THEREBY

Bonnie K. Jochmann, Pittsburgh, Pa., and Torbjorn Nervik, Selbu, Norway, assignors to ESB Incorporated

No Drawing. Filed Sept. 3, 1971, Ser. No. 177,839
Int. Cl. C22c 17/00
U.S. Cl. 75—.5 A 9 Claims

A metallic powder comprising cadmium, nickel and a cadmium nickel intermetallic compound is prepared by reacting in an aqueous acidic solution cadmium and nickel salts with a metal less noble than cadmium and nickel. The powder so produced has high surface area, high electrical activity and is easily fabricated into battery plates.

3,741,750

METHOD OF CONTROLLING BASIC OXYGEN FURNACE AND BESSEMER CONVERTER PROCESSES

Richard T. Davis, 18 Crumlin Ave., Girard, Ohio 44420

Continuation-in-part of application Ser. No. 34,267, May 4, 1970. This application Oct. 19, 1970, Ser. No. 82,215
Int. Cl. C21c 7/00
U.S. Cl. 75—60 2 Claims

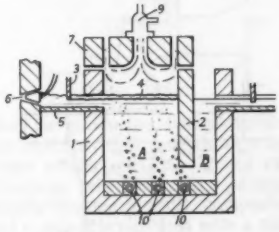
A method of controlling the blowing process in a Bessemer converter or a basic oxygen furnace in which the blowing process may be brought to a definite end point indicative of proper oxidation and in which the necessity of further treatment of ingot deoxidation is eliminated. The amount and type of scrap introduced into the charge is precisely controlled, based on a history of previous blows.

3,741,751

HEATING OF MOLTEN METAL

David Charles Bone, Quainton, England, assignor to The British Aluminium Company Limited, London, England

Filed Sept. 10, 1970, Ser. No. 71,155
Claims priority, application Great Britain, Sept. 12, 1969, 45,163/69
Int. Cl. C22b 9/00, 29/00, 21/06
U.S. Cl. 75—65 8 Claims



Molten metal, particularly aluminium and its alloys, is covered with a flux layer and is heated from above by a combustion system, the gaseous products of which are not shielded from the metal surface otherwise than by the presence of said flux.

3,741,752

ACID LEACHING PROCESS FOR TREATING HIGH GRADE NICKEL-COPPER MATTES

David John Ivor Evans, North Edmonton, Alberta; Herbert Veltman, and Patrick T. O'Kane, both of Fort Saskatchewan, Alberta, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Jan. 22, 1971, Ser. No. 108,905
Int. Cl. C22b *15/08, 23/04*
U.S. Cl. 75—101 9 Claims

Nickel and copper values are separately recovered from copper-nickel-sulphide matte by means of a multi-stage acid leach process. The matte is treated in a first leaching stage in which the acid to acid-reactive metals molar ratio and leaching time are controlled to selectively extract the bulk of the nickel values while the copper values remain in the leach residue. The residue containing copper values and a minor portion of the nickel values is then acid leached in one or more stages to substantially completely extract copper values and the residual nickel values. Precious metal contained in the matte are concentrated in the residue from the secondary leaching stages. Copper is recovered from the solution from the secondary leaching stages and the spent solution containing one mole of acid per mole of copper recovered is recycled as required to the first leaching stage to maintain the desired sulphur balance in that stage.

3,741,753

METHOD FOR ADDING MANGANESE ALLOYING MEMBER TO STEEL

Heinrich Walz and Ray A. Bloom, Canton, Ohio, assignors to The Timken Company, Canton, Ohio

No Drawing. Filed July 26, 1971, Ser. No. 166,306
Int. Cl. C22c *33/00, 35/00*
U.S. Cl. 75—129 8 Claims

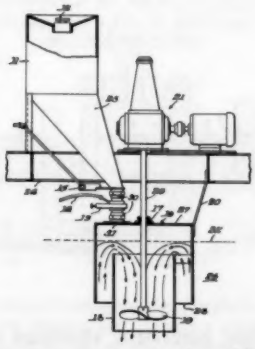
A method for adding a manganese-base alloying agent to ferrous liquid metal by inserting into the liquid metal a wire-like configuration having a composition, by weight, of from about 65% to about 85% manganese, from about 10% to about 35% nickel, and with or without a balance of up to about 15% iron and/or up to about 0.5% aluminum with incidental impurities.

3,741,754

METHOD FOR MAKING METAL ALLOYS

Charles M. Mainland, La Porte, Ind., assignor to United States Smelting, Refining & Mining Company, New York, N.Y.

Filed Apr. 29, 1971, Ser. No. 138,672
Int. Cl. C22c *1/02, 11/02*
U.S. Cl. 75—135 10 Claims



An apparatus and method are provided for making metal alloys in which at least one of the alloying metals is reactive with air. The method involves the introduction of distinct particles of the air-reactive metal directly into a liquid bath of a non-air-reactive metal in combination with the use of an inert, protective gas (which is non-reactive with the air-reactive metal) as a covering for the alloying process.

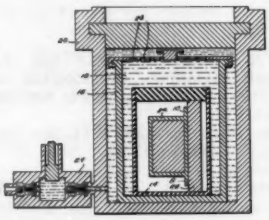
The apparatus in turn is used to introduce air-reactive metal into a liquid bath of non-air-reactive metal and includes: an open-ended housing which can be inserted into the bath, a supply container used to contain the air-reactive metal, a valve located between the housing and the supply to adjust the flow of air-reactive metal from the supply, a gas inlet for introducing inert gas into the supply, and a mixing device, such as an agitator, disposed within the housing and used to promote the alloying reaction.

3,741,755

METHOD OF ISOSTATICALLY PRESSING METAL POWDER INTO DESIRED METAL SHAPES

Daniel D. Allen, 179 Salem St., Reading, Mass. 01867

Filed Nov. 4, 1971, Ser. No. 195,787
Int. Cl. B22f *1/00, 3/24*
U.S. Cl. 75—214 14 Claims



Isostatic pressing of metal powder is carried out in an improved manner by utilizing a specially formed tooling enclosure body made of a relatively hard plastic material which takes the place of conventionally employed soft rubber. The relatively hard plastic material, while held in contact with a molding pattern is thermo-formed under vacuum and its thickness is controlled to provide relatively stiff wall portions capable of receiving a quantity of metal powder and sustaining its weight without distortion or appreciable dimensional change during processing. Hydrostatic pressure exerted through the plastic tooling enclosure produces a metal shape made to exacting specifications and characterized by high quality surface finishing.

3,741,756

METAL CONSOLIDATION

John W. Andersen and Donald R. Cavote, Columbus, Ohio, assignors to Wheeling-Pittsburgh Steel Corporation, Pittsburgh, Pa.

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,162
Int. Cl. B22f *1/00*
U.S. Cl. 75—223 5 Claims

The application discloses a process for consolidation of metal particles at an elevated temperature within a bed of particulate material comprising a mixture of refractory material and a particulate "getter" material, selected from the group consisting of aluminum, titanium, and zirconium, for reacting with oxygen released from the refractory material during the heating period to prevent contamination of the consolidated product.

3,741,757

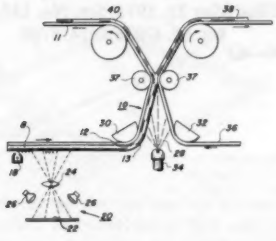
MIGRATION IMAGE DEVELOPED BY SPLITTING OR ABRADING SOFTENABLE LAYER

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of applications Ser. No. 460,377, June 1, 1965, now Patent No. 3,520,681, Ser. No. 483,675, Aug. 30, 1965, now Patent No. 3,656,990, and abandoned application Ser. No. 725,676, May 1, 1968. Said application Ser. No. 725,676 being a continuation-in-part of said applications Ser. Nos. 483,675 and 460,377, both being continuations-in-part of application Ser. No. 403,002, Oct. 12, 1964, now abandoned. This application Dec. 16, 1968, Ser. No. 784,164

Int. Cl. G03g *13/00, 13/06, 13/14*

U.S. Cl. 96—1 R 19 Claims



Providing an imaged member comprising a layer of softenable material and migration material selectively distributed in depth in said softenable material in first image configuration and comprising in addition to said first image pattern of migration material a background of substantial amounts of migration material in said softenable material but spaced apart, in depth, from said first image pattern; and removing said background.

3,741,758

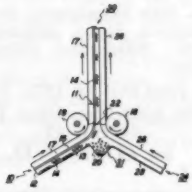
MIGRATION IMAGING EMPLOYING PRESSURE NIP DEVELOPMENT

Thomas A. Chrzanowski, Penfield, and Bernard Grushkin, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 14, 1970, Ser. No. 97,803

Int. Cl. G03g *13/12*

U.S. Cl. 96—1 R 12 Claims



A process for removing background from a migration imaged member comprising a layer of softenable material and migration material selectively distributed in depth in said softenable material with some background material, by extruding away the background material and contiguous portions of softenable material, for example, by passing the migration imaged member through a pressure nip wherein some of the softenable material is extruded in front of the nip carrying with it the unmigrated particles.

3,741,759

FROST IMAGING PROCESS

Roger N. Ciccarelli, Rochester, Ira L. Seldin, Penfield, and Frank G. Belli, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,276

Int. Cl. B41m *5/20;* G03g *13/22*

U.S. Cl. 96—1.1 3 Claims

The invention relates to a frost imaging process wherein the surface deformable film comprises a thermoplastic material and an additive to improve the frostability of the film. The additive has a viscosity greater than the bulk thermoplastic material at the softening temperature of said bulk material.

3,741,760

IMAGING SYSTEM

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of abandoned application Ser. No. 707,871, Feb. 28, 1968. This application May 17, 1971, Ser. No. 144,215

Int. Cl. G03g *17/00*

U.S. Cl. 96—1.2 2 Claims

The subject matter of this patent application pertains to a method of photoelectrophoretic imaging. The process comprises the development of a localized electric field by a transparent electrode-coronode system, in conjunction with an imaging suspension comprising photoelectrophoretic imaging particles dispersed in an insulating carrier liquid. As a result of a non-homogeneous electric field developed in the imaging suspension, upon exposure selectively to an electromagnetic radiation source through the transparent electrode, an image is formed in the non-illuminated areas on the surface of the transparent electrode.

3,741,761

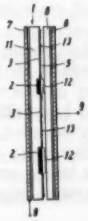
NON-ELECTROSTATIC PRINTING ELECTROGRAPHY

Costantino Marcus Cantarano, 49 Avenue Franklin Roosevelt, Thiais 94, France

Continuation-in-part of abandoned application Ser. No. 631,792, Apr. 18, 1967. This application Dec. 8, 1969, Ser. No. 870,405

Int. Cl. G03g *13/08, 15/08*

U.S. Cl. 96—1 R 6 Claims



A method for producing electrographic images from conductivity characteristics ranging from an area exhibiting maximum conductivity, to an area exhibiting minimum conductivity, said conductivity pattern being affixed to an insulating backing member, comprising the steps of coating said conductivity pattern with a thin layer of developer powder capable of receiving an electric charge, disposing a fluid insulating layer against said coated conductivity pattern so that said coated conductivity pattern is electrically insulated between said insulating backing member and said fluid insulating layer, said insulating backing member and said fluid insulating layer being disposed between first and second electrodes, at least one of

said electrodes being a grid electrode with said grid electrode being in spaced relationship with said coated conductivity pattern and being juxtaposed to said fluid insulating layer, generating an electric field of sufficient strength between said electrodes and across said fluid insulating layer and said insulating backing member to charge said powder from said conductivity pattern and to electrically remove a part of the coating powder; whereby a portion of said powder is sufficiently charged and removed from said conductivity pattern and the remainder of said powder is insufficiently charged so that it continues to coat said conductivity pattern thereby producing a stable electrographic image on said conductivity pattern by the remaining part of the coating powder said portion of said powder removed from said conductivity pattern migrating through the openings in said grid electrode and being removed from said electric field.

This electric field can be alternatively modulated.

3,741,762

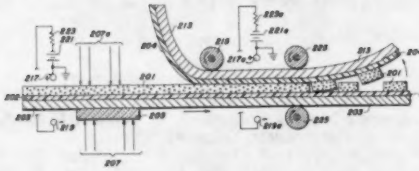
MANIFOLD IMAGING MEMBER AND PROCESS

Ray H. Luebbe, Jr., Rochester, N.Y., and John F. Byrne, Worthington, and Thomas M. Greeno, Columbus, Ohio, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1971, Ser. No. 105,387

Int. Cl. G03g *5/00, 13/00*

U.S. Cl. 96—1.5 **38 Claims**



An imaging method which employs an imaging member comprising a donor layer having coated thereon a first resinous layer, a fracturable electrically photosensitive imaging layer, a second resinous layer on said electrically photosensitive layer and a receiver layer on said second layer. The method involves subjecting the imaging layer to an electric field, exposing the imaging layer to an imagewise pattern of electromagnetic radiation to which the imaging layer is sensitive and, while the resinous layers are thermally liquefied, the donor and receiver layers are separated whereupon the imaging layer fractures leaving a positive image on one of the donor and receiver layers and a negative image on the other layer.

3,741,763

RAPID COLOR REVERSAL PHOTOGRAPHIC DEVELOPING PROCESS

Hiroyuki Amano, Haruhiko Iwano, and Tadao Hatano, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed June 10, 1971, Ser. No. 151,949

Claims priority, application Japan, June 10, 1970, 45/49,634

Int. Cl. G03c *5/38, 7/02*

U.S. Cl. 96—22 **6 Claims**

A process for developing an exposed color reversal photographic material rapidly which comprises black-and-white developing the color reversal photographic material for shorter than 30 seconds, said material comprising a support having coated thereon at least one silver halide emulsion layer containing a color coupler, said support being (a) a paper having a weight of less than 100 g./m.^{2}, (b) a synthetic resin-coated paper, (c) a resin-impregnated paper having a low water-absorptive property or (d) a resin film, color-developing it for shorter than 60 seconds, and bleach-stabilizing it for shorter than 60 seconds, said processing steps containing no water-washing step.

3,741,764

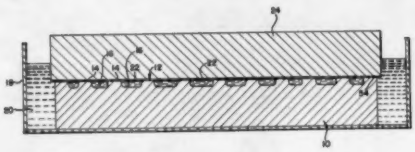
METHOD OF MAKING ACCURATE REPRODUCTION

Walter Weglin, Seattle, Wash., assignor to Jerobee Industries, Inc., Redmond, Wash.

Filed May 21, 1971, Ser. No. 145,721

Int. Cl. G03c *5/24, 5/00*

U.S. Cl. 96—63 **9 Claims**



A method of making an accurate reproduction of a die having raised die elements and adjacent recess areas. The die is immersed in a photographic developing solution, with the die face being disposed upwardly. A fully exposed photographic film is placed into the developing solution and pressed against the die face so that the developing solution is excluded from those areas of the film that press against the die elements. The film is then removed from the developing solution, immediately rinsed in water to remove the developing solution, and then placed in a fix solution to produce a negative that is an accurate reproduction of the raised die elements.

3,741,765

PROCESS FOR DEVELOPING SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS AT HIGH TEMPERATURE

Haruhiko Iwano, Isao Shimamura, Reiichi Ohi, Tadao Shishido, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Nakanuma, Minami Ashigara-shi Kanagawa, Japan

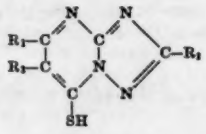
No Drawing. Filed Dec. 16, 1970, Ser. No. 98,880

Claims priority, application Japan, Dec. 16, 1969, 44/101,117

Int. Cl. G03c *5/30*

U.S. Cl. 96—66.3 **14 Claims**

A developing process which comprises subjecting a multi-layer silver halide color photographic material to high temperature processings in the presence of a compound represented by the following general formula



wherein R_1 and R_2, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aralkyl group, an aryl group, or a haloaryl group, and R_3 represents hydrogen atom, a halogen atom, or an alkyl group is disclosed.

3,741,766

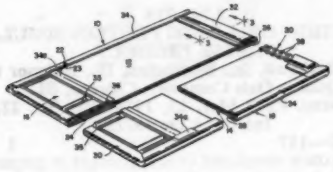
PHOTOGRAPHIC FILM UNIT FOR PRODUCING IMAGES IN COLOR

Philip A. LaMonaca, Randolph, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 3, 1972, Ser. No. 214,664

Int. Cl. G03c *1/76*

U.S. Cl. 96—76 C 8 Claims



A photographic, self-developing film unit comprising a photosensitive layer including selectively sensitized silver halide emulsions having associated therewith dye image-forming materials, adapted to be exposed and processed to produce a color transfer image. The film unit comprises first and second rectangular sheets secured in face-to-face relation at their lateral and trailing end margins by a generally rectangular binding sheet including a medial rectangular opening surrounded by lateral and end marginal portions. The binding sheet is secured to the outer surface of one of the sheets and the lateral and end marginal portions are folded around lateral and trailing end edges of the sheet and secured to the outer surfaces of the other sheet. A container of processing liquid is attached to the leading end of one of the sheets by a binding strip secured in overlapping relation to the container and leading end margin of the sheet. The film unit is adapted to be processed by advancing it, container foremost, relative to and between a pair of juxtaposed pressure-applying members which discharge the liquid contents of the container therefrom and distribute the processing liquid in a layer between the sheets for permeation into the photosensitive layer. The external binding sheet functions to control the thickness of the layer of liquid and to provide processing liquid at the edges of the exposed area sufficient to insure complete transfer color image formation to the edges of the area in which the visible image is desired. The binding strip includes end sections extending a short distance toward the trailing end of the film unit beyond the leading edge of the opening in the binding sheet for spacing apart the pressure-applying members to insure spreading of sufficient processing liquid between the sheets in this region.

3,741,767

PHOTOGRAPHIC EMULSIONS CONTAINING ALKALI METAL FERRICYANIDES

John Harold Baylis and Anthony John Bond, Ilford, England, assignors to Ilford Limited, Ilford, England

No Drawing. Filed June 22, 1971, Ser. No. 155,611

Claims priority, application Great Britain, June 26, 1970, 31,166/70

Int. Cl. G03c *1/02*

U.S. Cl. 96—94 7 Claims

According to the present invention an alkali metal ferricyanide is added to a gelatin silver halide emulsion prior to flocculation. Emulsions having reduced internal sensitivity are obtained.

3,741,768

IMBIBITION ANIONIC DYE IMAGE MORDANTED WITH N-HETERO HOMOPOLYMER

August Jean Van Paesschen, St. Vincentiusstraat 6, Antwerp, Belgium; Daniel Maurice Timmerman, Theofiel Reynlaan 68, Mortsel, Belgium; Albert Emiel Van Hoof, Elisabethlaan 85, Berchem, Belgium; Raymond Albert Roosen, Antwerpsestraat 281, Mortsel, Belgium; and Roland Gaston Verbrugghe, Leopoldstraat 46, Mechelen, Belgium

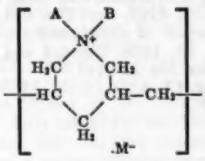
No Drawing. Continuation of abandoned application Ser. No. 768,530, Oct. 17, 1968. This application May 14, 1971, Ser. No. 143,635

Claims priority, application Great Britain, Oct. 17, 1967, 47,310/67

Int. Cl. G03c *1/72, 1/84;* B41m *5/00*

U.S. Cl. 96—114 7 Claims

An imbibition dye image is produced by imagewise applying an anionic dye solution to a hydrophilic colloid layer mordanted with a homopolymer containing the following recurring units:



wherein each of A and B represents a hydrogen atom, a C_1–C_5 lower alkyl group unsubstituted or substituted with a hydroxyl, cyano, acetate or carbonamide group, or A and B represent together the necessary atoms to close a morpholine, a piperidine or a pyrrolidine nucleus, and M^- represents a photographically inert anion.

3,741,769

NOVEL PHOTOSENSITIVE POLYMERIZABLE SYSTEMS AND THEIR USE

George H. Smith, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Original application Dec. 6, 1971, Ser. No. 205,392. Divided and this application Oct. 24, 1972, Ser. No. 299,764

Int. Cl. G03c *1/68*

U.S. Cl. 96—35.1 2 Claims

A photosensitive admixture comprising a diaryliodonium compound and a compound capable of sensitizing 2-methyl-4,6-bis(trichloromethyl)-s-triazine.

3,741,770

PREPARATION OF WINE

George W. van Olphen, 2229 Brown Ave., Santa Clara, Calif. 95051

Continuation of abandoned application Ser. No. 822,606, May 7, 1969. This application Aug. 20, 1971, Ser. No. 173,632

Int. Cl. C12g *1/02*

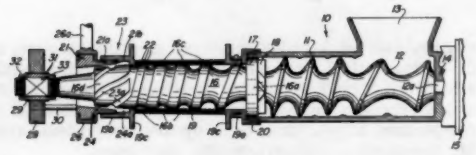
U.S. Cl. 99—35 3 Claims

A winemaking process wherein the grape must received from a press is first depectinized, the depectinized must is placed under pressure with an inert gas, the insoluble solids and free run juice are then separated by a flotation step at atmospheric pressure and the clean juice is then fermented.

3,741,771
WATER-SOLUBLE PROTEIN MATERIALS
Akiva Pour-El, St. Paul, and Thomas C. Swenson, Minneapolis, Minn., assignors to Archer Daniels Midland Company, Decatur, Ill.
No Drawing. Continuation-in-part of application Ser. No. 797,669, Feb. 7, 1969. This application Sept. 10, 1970, Ser. No. 71,254
The portion of the term of the patent subsequent to Jan. 30, 1990, has been disclaimed
Int. Cl. A23j *1/14;* A23l *1/00*
U.S. Cl. 99—79 13 Claims

Dispersed plant proteins are digested with an acid active enzyme at a pH below 4.6. Quiescent conditions are maintained in the reaction medium and digestion proceeds until the insoluble colloidal protein is substantially completely dissolved. The pH is raised to about 4.6 and the medium is allowed to stand causing additional insoluble protein to precipitate. The insoluble residue is removed and the soluble protein material is dried. A clear liquid, which can be carbonated, is formed containing the solubilized protein material at a pH corresponding to the isoelectric point of the protein.

3,741,772
PROCESS FOR PRODUCING DE-BONED MEAT PRODUCTS
Archie Rae McFarland, Salt Lake City, Utah
Application Dec. 3, 1969, Ser. No. 881,686, which is a continuation-in-part of abandoned application Ser. No. 593,532, Nov. 10, 1966. Divided and this application Feb. 7, 1972, Ser. No. 224,181
Int. Cl. A22c *18/00, 25/00*
U.S. Cl. 99—107 11 Claims



Material obtained from animals, poultry, or fish and containing edible flesh along with normally inedible relatively hard or tough components, such as bone, gristle, tendons, etc., is fed in ground condition into one end of a perforated conduit that has a conveyor screw therein which progressively decreases in conveying capacity from the feed end of the conduit to an imperforate discharge end thereof. Such inedible components are compacted within the imperforate discharge end of the conduit by an extension of the conveyor screw prior to discharge following build-up and conveyance along the interior surface of the perforate portion of the conduit as a filter mat through which edible flesh is forced toward and through the perforations of the conduit to provide a substantially bone-free edible product. The discharge passage surrounding the extension of the conveyor screw can be varied in size, preferably by a tapered ring that is movable back and forth axially of the conveyor screw extension, and preferably the spacing between conveyor screw and conduit is variable. The forward faces of the conveyor screw flights are preferably concave to provide a forwardly projecting circumferential overhang that tends to keep particles of bone near the axis of the screw, and the conduit wall thickness is unusually thick so as to withstand high pressures. Unusually high production rates can be obtained by feeding finely ground material into the conduit by means of a high pressure pump. The discharged and normally inedible components can be slurried in a digestant liquid and the digested material recovered as a food product by the application of centrifugal force. In instances where some minute particles of bone are discharged with the fleshly components, they can be homogenized by subjecting such flesh components to an attrition operation.

3,741,773
PREPARATION OF RICOTTA CHEESE
Nicholas E. Pontecorvo, Tarzana, Calif., assignor to Pontecorvo R & D Company, Los Angeles, Calif.
Filed May 22, 1970, Ser. No. 39,721
Int. Cl. A23c *19/02*
U.S. Cl. 99—116 9 Claims

A flotation method of collecting ricotta cheese curd in a reduced neck at the top of a processing tank. Whey and milk are treated to form the curd which rises to the top of the body of liquid in the tank. Hot water is then injected into the bottom of the tank to elevate the body of liquid until the curd is skimmed off from the neck and delivered into a receptacle.

3,741,774
PREPARATION OF A HIGH PROTEIN SIMULATED CHEESE PRODUCT
Morris P. Burkwall, Jr., Barrington, Ill., assignor to The Quaker Oats Company, Chicago, Ill.
No Drawing. Filed Mar. 23, 1970, Ser. No. 22,025
Int. Cl. A23c *19/12*
U.S. Cl. 99—117 1 Claim

A high protein simulated cheese product is prepared by forming a mixture of specified amounts of cheese, pregelatinized starch, a high protein binding agent, water and sugar or sugar equivalents. The mixture is heated to 125° F. to 195° F. and while at a temperature within this range it is extruded into small strands.

3,741,775
MEAT-TYPE AROMAS AND THEIR PREPARATION
Chi-Hang Lee, Spring Valley, N.Y., assignor to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Dec. 7, 1970, Ser. No. 95,903
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R 10 Claims

An aqueous solution of cysteine, thiamine and a 6-deoxy hexose is reacted at boiling temperature for a sufficient period of time to produce a meatlike aroma and flavor which is characteristic of roast and/or cooked beef. The composition evolving this aroma may be concentrated, stored and combined with solvents, carriers, extenders, thickeners, flavors and other aroma imparting materials.

3,741,776
PROCESS FOR PREPARING FOODS AND DRINKS
Masakazu Mitsuhashi, Okayama, Mamoru Hirao, Akaiwa-gun, and Kaname Sugimoto, Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan
No Drawing. Filed Jan. 8, 1969, Ser. No. 789,935
Claims priority, application Japan, Jan. 23, 1968, 43/3,863
Int. Cl. A23l *1/26*
U.S. Cl. 99—141 R 4 Claims

Maltitol is used as the major or sole sweetener of low or non-calorie foods. It serves the functions of providing solids volume, increased viscosity, body, luster, moisture retention and stability to the food without the necessity of sugary or starchy fillers.

3,741,777
TREATING PROCESS TO IMPROVE SEPARABILITY OF BACON SLICES
Raymond J. Wrobel, Chicago, and Robert B. Rendek, Hillside, Ill., assignors to Armour and Company, Chicago, Ill.
No Drawing. Filed Oct. 6, 1970, Ser. No. 78,618
Int. Cl. A22c *18/00;* A22b *1/02*
U.S. Cl. 99—159 10 Claims

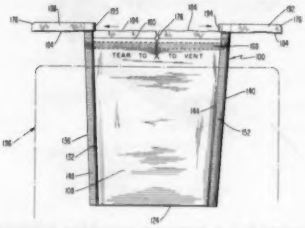
A pickle solution containing lecithin is pumped into a pork belly and the belly then sliced to form bacon slices which can be more easily separated from each other.

3,741,778

PACKAGE WITH SELF-CONTAINED HANDLE FOR STORING AND HEATING FOOD, AND METHOD OF FORMING SAME

James H. Rowe, New Hyde Park, N.Y., assignor to Nabisco, Inc., New York, N.Y.

Filed Mar. 9, 1971, Ser. No. 122,307
Int. Cl. B65d *81/34*
U.S. Cl. 99—171 H 18 Claims



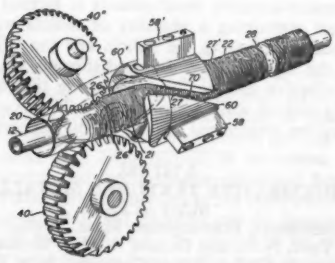
A sealed package having a self-contained handle for storing portions of food and for heating or cooking the food in a toaster. The handle is adapted to be extended outwardly from the toaster and thus to remain cooler than other parts of the package to facilitate removal of the package after completion of the heating or cooking cycle. Also, methods are disclosed for making sealed packages of this type.

3,741,779

METHOD OF MARKING SHIRRED TUBING

Algimantas P. Urbutis, Chicago, Bernard H. Schenk, Hinsdale, Joseph J. Risany, La Grange Park, and Walter V. Marbach, Palos Heights, Ill., assignors to Union Carbide Corporation

Application May 31, 1968, Ser. No. 765,711, now abandoned, which is a division of application Ser. No. 418,506, Dec. 15, 1964, now Patent No. 3,397,069, dated Aug. 13, 1968. Divided and this application Mar. 5, 1970, Ser. No. 16,662
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 2 Claims



A method for marking flexible tubular sausage casing by interrupting a regular shirring operation on a shirring mandrel, then advancing the casing and shirring irregularly for a brief interval of time, then repeating the regular shirring operation, the mark being constituted by a length of irregularly shirred tubing.

3,741,780

METALLIZING COMPOSITIONS CONTAINING BISMUTHATE GLASS-CERAMIC CONDUCTOR BINDER

Lewis Charles Hoffman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Nov. 4, 1970, Ser. No. 86,986, now Patent No. 3,684,536. Divided and this application Jan. 12, 1972, Ser. No. 217,234
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 8 Claims

Metallizing compositions for screen printing circuits onto ceramic substrates which consist essentially of, by weight, (a) 3–15% of a finely divided powder of such glass-ceramic precursors as a binder and (b) 85–97% of a finely divided noble metal powder. Dielectric ceramic substrates having printed and fired thereon such metallizing compositions.

3,741,781

DRY GRANULES OF NITROCELLULOSE CONTAINING A POLYOL AND METHOD FOR THE PREPARATION OF SUCH GRANULES

Jacques J. Plazanet and Christiane Gaillard, born Letellier, Bergerac, France, assignors to Etat Francais represente par le Ministere d'Etat de la Defense National, Delegation Ministerielle pour l'Armement (Direction des Poudres), Paris, France

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,806
Claims priority, application France, Jan. 9, 1970, 7000350
Int. Cl. C08b *21/12, 21/14, 29/02*
U.S. Cl. 106—180 7 Claims

This invention relates to dry nitrocellulose granules which are particularly useful for the manufacture of polyurethane varnishes, wherein they contain, in addition to the nitrocellulose, a polyol selected from the group comprising polyoxyalkyleneglycols and in particular polyoxypropyleneglycols with a molecular weight of 800 to 3000 and more, polyesters and polyethers containing free hydroxyl groups capable of reacting with isocyanates, in the proportion of 10 to 30% and preferably 15 to 25% by weight of polyol with respect to the nitrocellulose. The invention also relates to a method of preparation of the abovementioned dry nitrocellulose granules.

3,741,782

STABILIZED ZIRCONIUM SALTS

Donald T. Stewart, Buckinghamshire, and Ian McAlpine, Failsworth, England, assignors to The British Aluminum Company Limited, London, England

No Drawing. Filed May 13, 1971, Ser. No. 143,263
Claims priority, application Great Britain, May 13, 1970, 23,177/70
Int. Cl. C08b *21/00*
U.S. Cl. 106—162 11 Claims

This invention relates to the stabilising of zirconium salts such as are used to convert aqueous solutions of natural or synthetic polymers capable of forming hydrophilic colloids into insoluble films. More particularly, the invention is concerned with the stabilising of a solution of an alkali metal zirconyl carbonate with a compound containing a diol group and of the general formula R_1—CHOH—CHOH—R_2. The invention extends to solutions so stabilised and to the use of the stabilised solutions in the manufacture of paper, paper board and the like cellulosic web materials.

3,741,783

HAIR PREPARATION

Deger Tunc, Edison, N.J., assignor to Johnson & Johnson

No Drawing. Filed May 3, 1971, Ser. No. 139,858
Int. Cl. C08h *17/34*
U.S. Cl. 106—189 15 Claims

A composition suitable for use as a hair preparation is provided which may be uniformly applied to the hair,

dries quickly upon application to form a flexible film, is easily removed from the hair by washing in the usual manner with soap and water, and may be formulated to provide a degree of curl retention suitable for a wide range of specific hair setting conditions. The composition comprises at least one sulfated alkali cellulose ether in a solvent mixture comprising at least 60% by weight of an alcohol and 0 to 40% by weight of water. Preferably, the composition comprises at least one sulfated alkali ether resin chosen from the group consisting of alkyl ethers, hydroxyalkyl ethers and hydroxyalkyl-alkyl ethers, wherein each of the alkyl and hydroxyalkyl groups contains no more than four carbon atoms. The composition, when combined with an aerosol propellant system, may be applied as a hair spray.

3,741,784

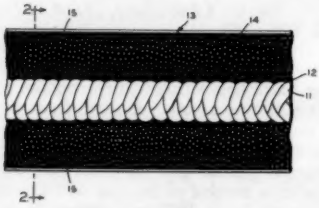
WATER-REPELLENT PRESERVATIVE DRESSING FOR POLYVINYL CHLORIDE FISHING LINES

Arthur M. Howald, Perrysburg, Ohio, assignor to Shakespeare Company, Columbia, S.C.

Continuation-in-part of abandoned application Ser. No. 25,087, Apr. 2, 1970, which is a division of application Ser. No. 703,146, Feb. 5, 1968, now Patent No. 3,523,034. This application Jan. 27, 1972, Ser. No. 221,375

Int. Cl. C08h *17/22, 9/08*

U.S. Cl. 106—268 **2 Claims**



A water-repellent preservative dressing for a fly fishing line having a surface layer of plasticized polyvinyl chloride contains a preservative which is present in such a proportion as to maintain substantially constant the flexibility of the line, and which consists of 0.5 to 2.0 parts of at least one substantially non-volatile ester of the class consisting of monomeric polycarboxylic acid esters and phosphates which are primary plasticizers for polyvinyl chloride. The ester constitutes at least 50% of the weight of the thinner in a composition that consists essentially of one part of paraffin wax, .05 to 0.3 part of at least one soap of the class consisting of aluminum, calcium and magnesium soaps, and a thinner, any thinner other than the ester consisting of at least one solvent of the class consisting of kerosene, high boiling petroleum fractions, chlorinated paraffins and chlorinated naphthalenes.

3,741,785

SILICA TREATED ACICULAR ALKALI METAL TITANATES

Werner S. Lichtenstein, Chattanooga, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 21,199, Mar. 19, 1970. This application Feb. 23, 1971, Ser. No. 118,082

Int. Cl. C09c *1/36*

U.S. Cl. 106—299 **6 Claims**

Precipitation of hydrous silica in an amount ranging from 0.1 to 10 percent by weight of solid titanates present in an aqueous slurry of acicular alkali metal titanates results in a reduction of the formation of agglomerates or grit particles in the resulting titanates.

3,741,786

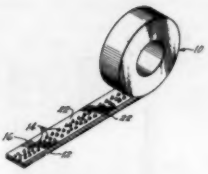
TRANSFER TAPE HAVING NON-CONTIGUOUS PRESSURE SENSITIVE ADHESIVE PATTERNS

John S. Torrey, Arcadia, Calif., assignor to Avery Products Corporation, San Marino, Calif.

Filed May 28, 1971, Ser. No. 147,881

Int. Cl. B32b *7/14;* **B41m** *3/12*

U.S. Cl. 117—3.1 **12 Claims**



There is provided a pressure sensitive adhesive transfer tape consisting of a release coated carrier tape bearing a plurality of substantially non-contiguous pressure sensitive adhesive segments. This construction allows the pressure sensitive adhesive segments to be transferred from the relase coated carrier tape to a substrate without cutting the carrier tape and/or the adhesive.

3,741,787

DRY DECALCOMANIA

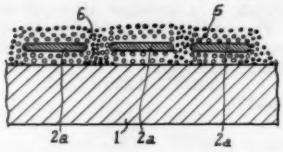
Roger Tordjman, 78 La Calle, Saint Cloud, France

Continuation-in-part of abandoned application Ser. No. 785,720, Dec. 20, 1968. This application June 8, 1971, Ser. No. 151,066

Claims priority, application Luxembourg, Aug. 7, 1968, 56,664/68

Int. Cl. B41m *3/12;* **B32b** *7/06*

U.S. Cl. 117—3.1 **15 Claims**



A pressure-sensitive decalcomania is formed of a support sheet containing a plurality of indicia with an adhesive coating covering the indicia and the adjacent surface of the support sheet. Selected solvents are employed in the adhesive coating for transferring the indicia to a receiving surface while retaining the adhesive coating surrounding the transferred indicia on the support sheet.

3,741,788

DECORATIVE TEXTURED METALLIC SURFACES

Irving Sheinhartz, Framingham, Mass., Walter L. Finlay, New York, N.Y., and Donald A. Hay, Medfield, Mass., assignors to Copper Range Company, New York, N.Y.

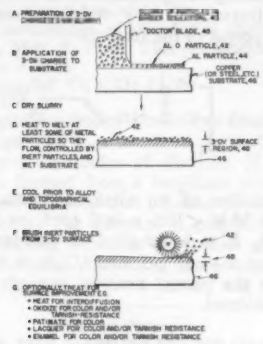
Filed Sept. 23, 1970, Ser. No. 74,778

Int. Cl. C23c *17/00*

U.S. Cl. 117—9 **22 Claims**

Partial fusion of a particulate charge, some or all of which is metallic, to a predetermined point short of thermodynamic equilibrium, has been found to develop esthetically pleasing and economical decorative surfaces. By proper selection of constituents and of their process-

ing, including optional processing steps after formation of the decorative topography, the surfaces can be tarnish



and corrosion-resistant. Various bronze compositions particularly lend themselves to this statement.

3,741,789

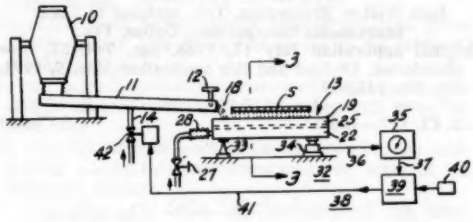
METHOD OF APPLYING PARTICLES TO A SURFACE

Harold K. Young, Herbert Wald, William O. Blanch, and Lacy C. Meadows, Baltimore, Md., assignors to Bethlehem Steel Corporation

Original application May 29, 1969, Ser. No. 829,014, now Patent No. 3,653,544. Divided and this application May 19, 1971, Ser. No. 144,952

Int. Cl. B44d *1/094*

U.S. Cl. 117—16 **6 Claims**



Particle dispensing apparatus coats one or more surfaces of a workpiece such as a moving web, strip, sheet, plate or flat wire. Particles are fed from at least one source over fluidized conveyors to separate particle applicators associated with each surface to be coated. Each particle applicator includes a receiver-dispenser having a fluidized bed and counter-rotating brush rolls which continuously picks up fluidized particles and discharges them against one of the surfaces to be coated in an amount which varies with particle level in the receiver-dispenser. A separate load cell supports each receiver-dispenser and drives a load indicator which produces weight signals that are related to particle level in each receiver-dispenser. A controller receiving the weight signals acts on the conveyor means to independently maintain a predetermined level of particles in each receiver-dispenser. This provides a uniform application of particles on each surface of the workpiece to be coated.

3,741,790

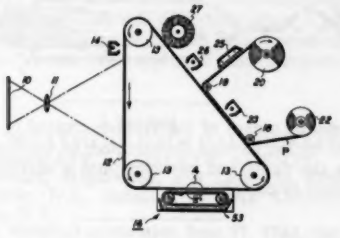
METHOD FOR MAGNETICALLY DEVELOPING ELECTROSTATIC IMAGES

Paul S. L. Wu, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Original application May 28, 1968, Ser. No. 732,737, now Patent No. 3,592,166. Divided and this application Dec. 16, 1970, Ser. No. 98,882

Int. Cl. C03g *13/08, 15/08*

U.S. Cl. 117—17.5 **1 Claim**



An improved method for magnetically developing electrostatic latent images on a photoconductive surface in the form of a belt. The method steps include forming the latent electrostatic images on a belt surface and transporting the belt surface along a predetermined path which is substantially parallel to and closely spaced to an endless belt carrying developer material including a magnetic component and an electrostatic component. The photoconductive belt and developer material transport move in the same direction. One or more magnetic fields are rotated in the development zone on an axis which moves in the same direction as developer material transport and photoconductive belt. The rotating magnetic fields move at speeds which are approximately two to three times the speed of the developer material transport and about four to five times the speed of photoconductive belt such that the developer material is caused to raise towards and away from the electrostatic images to be developed in a wave-like formation repeatedly during the development to effect a high quality of the images. Upon development of the image the developed image is transferred to a support sheet to form a permanent copy. To enhance solid area development an electric bias is coupled to the developer transport to suppress image background field.

3,741,791

SLURRY COATING SUPERALLOYS WITH FeCrAlY COATINGS

Douglas H. Maxwell, Monsey, N.Y., and James M. Gabriel, McKeesport, Pa., assignors to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Filed Aug. 5, 1971, Ser. No. 169,533

Int. Cl. C23c *9/00, 17/00*

U.S. Cl. 117—46 CA **3 Claims**

A slurry coating, particularly for the nickel-base and cobalt-base alloys, which comprises, by weight, 20–30 percent chromium, 8–12 percent aluminum, 10–16 percent silicon, 0.1–3 percent yttrium, scandium or lanthanum, balance iron is applied to a suitable substrate and diffusion heat treated to provide oxidation resistance thereto.

3,741,792

METHOD OF CLEANING AND COATING A SURFACE WITH PARTICLES DISPERSED IN A JET FLAME

Clifford S. Peck, Elberton, Ga., and Clarence A. Garrison, Monroe, La., assignors to C. S. Peck Co., Inc. Elberton, Ga.

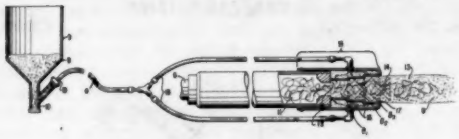
Filed Dec. 14, 1970, Ser. No. 97,553

Int. Cl. B05b *7/20, 7/02*

U.S. Cl. 117—46 FC **10 Claims**

A method for flame cleaning or flame coating employing the steps of producing a jet flame in a combustion

chamber; passing the flame through a venturi element positioned exteriorly of the combustion chamber, the venturi element being in communication with a supply of abrasive or coating particles; introducing the particles into



the flame by means of the vacuum created in the venturi element by the passage therethrough of the flame, and directing the flame and particles onto a surface that is to be cleaned or coated.

3,741,793

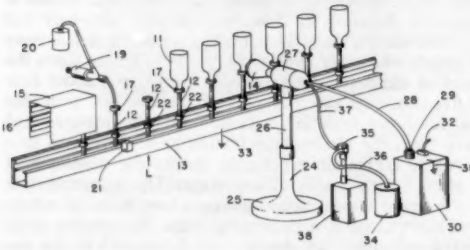
METHOD OF ELECTROSTATICALLY COATING HOLLOW ARTICLES

Charles Curtis Simmons, Skokie, Ill., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Continuation of abandoned application Ser. No. 657,199, July 31, 1967. This application Aug. 12, 1971, Ser. No. 171,396

Int. Cl. B05b *5/02*

U.S. Cl. 117—93.4 NC **7 Claims**



Hollow articles of insulating materials such as glass bottles are electrostatically coated by introducing a vapor into their interior to be condensed into a conductive coating on their inside surface. The coating of condensate is maintained at a potential that attracts a spray of charged coating material particles to the outside surface of he aricle.

3,741,794

METHOD FOR BONDING A POLYURETHANE COATING TO AN ORGANIC POLYMERIC SUBSTRATE

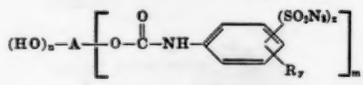
Adnan A. R. Sayigh and Fred A. Stuber, North Haven, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Mar. 2, 1970, Ser. No. 15,949, now Patent No. 3,652,505. Divided and this application Dec. 2, 1971, Ser. No. 204,362

Int. Cl. B44d *1/50;* **C08g** *22/06*

U.S. Cl. 117—93.31 **5 Claims**

Radiation (both heat and light)-sensitive polyurethanes are provided and are useful in the preparation of coatings which can be chemically bonded, by exposure to an appropriate source of radiation, to substrates containing C—H bonds (preferred substrates are polyolefins). The exposure can be carried out selectively in accordance with photoresist system technology or can be carried out over complete surfaces so as to bond paint and like sealant coatings to substrates such as exterior building surfaces and the like. The radiation-sensitive polyurethanes are derived by replacing part or the whole of the active hydrogen containing component, conventionally employed to form polyurethanes (by reaction with polyisocyanates), by a polyol of the formula:



where A=residue of an aliphatic alcohol of valency $(m+n)$ and M.W.<300, n is 2 to 5, m is 1 to 4 and $m+n$ is ≥ 6. R is lower-alkyl or halogen, $x=1$ to 2, $y=0$ to 2 and $x+y$ is ≥ 3, and SO_2N_3 is in the 3, 4, or 5-position in the phenyl nucleus, one of said positions being unsubstituted.

3,741,795

TABLETS FOR ORAL USE COATED WITH A STABILIZED SHELLAC SEALING COATING

Charles A. Signorino, King of Prussia, Pa., assignor to Colorcon Incorporated, West Point, Pa.

No Drawing. Original application May 9, 1969, Ser. No. 823,514, now abandoned. Divided and this application Dec. 7, 1971, Ser. No. 205,725

Int. Cl. A61k *9/00*

U.S. Cl. 117—100 A **5 Claims**

A tablet for oral use coated with a stabilized shellac sealing coating. The shellac is stabilized by adding a quantity of polymeric materials that contain basic groups. Such metrials include polyvinylpyrrolidone, polyvinylpyridine, and polyamide resins containing free amino groups. Such polymers block the carboxyl group of the shellac from cross-linking by providing an acid-base reaction between the shellac and the polymer.

3,741,796

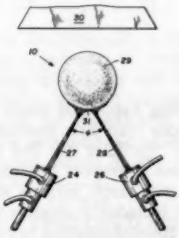
SILICA DEPOSITION UTILIZING MULTIPLE TORCHES

Jack Walker, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Original application July 11, 1968, Ser. 744,152, now abandoned. Divided and this application Mar. 5, 1971, Ser. No. 121,539

Int. Cl. B44d *1/08*

U.S. Cl. 117—105.2 **3 Claims**



A plurality of torch flames each resulting from the combustion of gaseous silicon tetrachloride and a mixture of hydrogen and oxygen are directed upon a graphite mandrel in order to form a high purity silica article upon the mandrel. Structure may be provided to prevent the buildup of deposits upon the nozzles of the torches to prevent obstruction of the nozzle openings. Additional glazing torches may be utilized to treat the silica articles as they are formed upon the mandrel.

3,741,797

LOW DENSITY, HIGH-STRENGTH BORON ON BERYLLIUM REINFORCEMENT FILAMENTS

Nicholas H. Chavasse, Jr., Forestville, and James C. Withers, Accokeek, Md., assignors to General Technology Corporation, Alexandria, Va.

No Drawing. Continuation of abandoned application Ser. No. 621,767, Mar. 9, 1967. This application Apr. 30, 1970, Ser. No. 31,839

Int. Cl. C23c *11/00*

U.S. Cl. 117—106 R 4 Claims

A high-strength low-density continuous filament having a density of about 2 g./cc. a tensile strength of more than 100,000 p.s.i. and a modulus of elasticity of more than 20×10^6 p.s.i. is formed from a beryllium wire substrate of about five mils diameter with a boron coating of about two mils thickness. The filament is prepared by vapor phase deposition from diborane in an inert gas after the beryllium is etched and electrically heated to about 400° C. The coated filament is slowly heated and cooled.

3,741,798

PROCESS FOR THE MANUFACTURE OF SOLUBLE ORGANIC COPOLYMERS AS WELL AS THEIR USE AS BINDERS COMPONENTS, ESPECIALLY IN PRIMERS AND TOP LACQUERS FOR GALVANIZED SHEET IRON

Horst Dalibor, Norderstedt, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,918

Claims priority, application Switzerland, Dec. 18, 1969, 18,826/69

Int. Cl. C08f *27/10, 15/40, 29/36*

U.S. Cl. 117—132 B 3 Claims

The present invention concerns a method of a process for the manufacture of polyhydroxyl compounds in the form of soluble copolymers, containing hydroxyl groups, based on vinyl compounds and vinyl-aromatic compounds in inert solvents, in the presence of polymerization initiators and optionally of chain-stopping agents, characterized in that these are manufactured by heating, from

(a) styrene or alkylstyrene, of which the alkyl groups possess 1 to 3 carbon atoms, or of a mixture of such alkyl groups,

(b) acrylic acid esters and/or methacrylic acid esters which contain 1 to 12 carbon atoms in the saturated alcohol radical,

(c) an α,β-ethylenically unsaturated monocarboxylic acid or dicarboxylic acid and reaction, with esterification, with

(d) glycidyl esters of α-alkylalkanemonocarboxylic acids and/or α,α-dialkylalkanemonocarboxylic acids of the following formula:

$C_{12-14}H_{22-26}O_3$, with the amounts of the compounds (a) to (d) having to add up to 100% by weight. The invention includes also the use of the hydroxyl group containing copolymers being soluble in organic solvents together with polyisocyanates for the production of reactive lacquers for surface protection that can be unpigmented, pigmented and/or contain fillers.

3,741,799

METHOD OF IMPROVING PAINT ADHESION TO LOW-SHRINK POLYESTER-BASED RESINS

Willy Paul Kulhanek, Cuyahoga Falls, Ohio, assignor to The General Tire & Rubber Company

No Drawing. Filed May 10, 1971, Ser. No. 142,016

Int. Cl. B32b *25/08, 27/36*

U.S. Cl. 117—138.8 F 7 Claims

Paint adhesion to cured polyester-based resins is severely deteriorated by the addition of low-shrink additives to the resin. This invention is a method of improving paint adhesion to low-shrink formulated polyester-based resins by addition to the uncured resin of certain lower alkyl ethers of formaldehyde condensates.

3,741,800

METAL PLATED PLASTICS

Frederick L. Baier, High Bridge, and Fred H. Ancker, Warren, N.J., assignors to Union Carbide Corporation

No Drawing. Original application Mar. 24, 1966, Ser. No. 536,986, now Patent No. 3,562,118, dated Feb. 9, 1971. Divided and this application June 8, 1970, Ser. No. 44,652

Int. Cl. C08j *1/40;* B32b *25/00;* B44d *1/22*

U.S. Cl. 117—138.8 E 1 Claim

Metal plated propylene/elastomer compositions exhibiting a minimum peel strength of at least about 5 pounds per inch are described herein. These plated products are useful in the automotive, appliance and electronic industries.

3,741,801

FABRIC TREATMENT WITH HALOGENATED CARBAMATE ANTISTATIC AGENTS

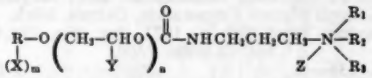
Fred S. Eiseman, Maplewood, and Leslie M. Schenek, Mountainside, N.J., assignors to GAF Corporation, New York, N.Y.

No Drawing. Original application June 17, 1968, Ser. No. 737,312, now Patent No. 3,564,043. Divided and this application Feb. 2, 1971, Ser. No. 112,080

Int. Cl. B44d *1/22*

U.S. Cl. 117—139.5 CQ 8 Claims

Fabrics are coated with antistatic agents of the formula:



wherein R represents alkyl, aryl or alkaryl radicals containing from 2 to about 18 carbon atoms, X represents halogen substituents such as chloro, bromo, fluoro, *m* represents an integer of from 1 to 37, Y represents hydrogen, methyl or ethyl, *n* has an average value of from 1 to 10, R_1 and R_2 are members of the group consisting of alkyl and hydroxyalkyl radicals having from 1 to 3 carbon atoms and R_3 is a hydroxyalkyl radical of from 1 to 4 carbon and Z is an anion, said antistatic agent being prepared by the condensation of halogen substituted alkyl, aryl and alkaryl polyethyleneoxy chlorocarbonate with a substituted alkyl diamine with subsequent acidification and alkoxylation so as to produce the desired antistatic agent.

3,741,802

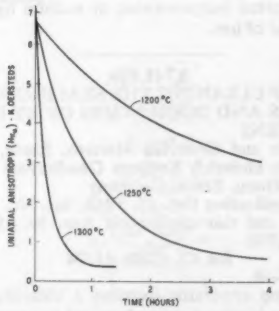
METHOD OF PRODUCING MAGNETIC DEVICES UTILIZING GARNET EPITAXIAL MATERIALS

Fred Bassett Hagedorn, Berkeley Heights, and Arjeh Jehuda Kurtzig, Short Hills, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Apr. 12, 1971, Ser. No. 133,187

Int. Cl. H01f *10/02*

U.S. Cl. 117—237 9 Claims



Device properties of heteroepitaxial garnet films evidencing growth-induced magnetic anisotropy intended for

use in magnetic devices performing the functions of storage, switching, light deflection, etc., are improved by annealing for critical periods over the temperature range of from about 1200° C. to 1350° C.

3,741,803

METHOD FOR THE PRODUCTION OF FOG-RESISTANT THERMOFORMED STRUCTURES

William J. Clayton, Fairport, N.Y., assignor to Mobil Oil Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 799,527, Feb. 14, 1969. This application Apr. 12, 1971, Ser. No. 133,406

Int. Cl. B32b *27/30, 27/32*

U.S. Cl. 161—247 5 Claims

The present invention relates to a method for the production of coated structures adapted for thermoforming into structures such as support structures for the containment of moisture emitting products, such as fresh meat or produce for example, the tendency of said structures to fog or become hazy as a result of water condensation in the form of droplets on the surface thereof being substantially reduced or completely eliminated.

3,741,804

CRYOGENIC CHEMICAL DEBURRING

Thomas F. Stapleton, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,468

Int. Cl. B08b *7/00*

U.S. Cl. 134—3 1 Claim

Process for chemically deburring machined or molded parts including the steps of refrigerating the part to a sufficiently low temperature such that it will form and retain a protective layer of ice on its principal surfaces during the deburring operation.

3,741,805

CHLORINE STABLE COMPOSITION FOR CLEANING AND SANITIZING AND METHOD OF USE

Homer E. Crotty and Charles R. Coffey, Cincinnati, and Thomas C. Tesdahl, Forest Park, Ohio, assignors to Chemed Corporation, Cincinnati, Ohio

No Drawing. Application Apr. 23, 1970, Ser. No. 31,373, now Patent No. 3,666,679, which is a continuation-in-part of application Ser. No. 749,585, Aug. 2, 1968, now Patent No. 3,578,499. Divided and this application Aug. 10, 1971, Ser. No. 170,644

The portion of the term of the patent subsequent to May 11, 1987, has been disclaimed

Int. Cl. B08b *7/00;* C11d *3/48*

U.S. Cl. 134—4 10 Claims

An aqueous gelling composition for cleaning and sanitizing comprising (A) a Xanthan gum, (B) a diluent selected from the group consisting of Na_2SO_4 and NaCl, (C) a linear alkyl benzene sulfonate, (D) propylene glycol dispersing agent, (E) fluorescein dye, and (F) a chlorine release agent such as chlorinated trisodium phosphate, chlorinated isocyanurates, or sodium hypochlorite; and its method of use.

3,741,806

METHOD OF CLEANING THE SEALING SURFACES OF DOORS AND DOOR JAMBS OF BY-PRODUCT COKE OVENS

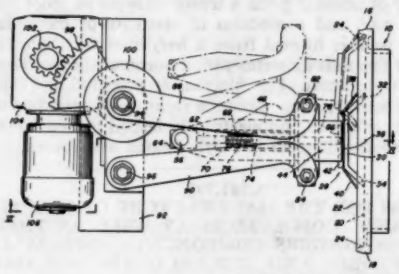
Walter Stanke and Gottfried Mertens, Essen, Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Original application Oct. 13, 1969, Ser. No. 865,637. Divided and this application Apr. 30, 1971, Ser. No. 138,956

Int. Cl. C10b *43/04*

U.S. Cl. 134—6 2 Claims

The cleaning apparatus includes a cleaning tool with a base portion having a pair of spaced scrapers extending therefrom in diverging relation to each other. An arm member extends rearwardly from the cleaning tool base portion. A rod member is pivotally secured to the rear end portion of the arm member and extends forwardly therefrom toward the cleaning tool base portion. An intermediate tubular support member is coaxially positioned on the rod member and has a transverse connecting portion adjacent the front end. A pair of levers is connected to the transverse connecting member and extend rearwardly therefrom and the other ends of the pair of levers are pivotally connected to a fixed frame member. A drive



mechanism is provided to reciprocally move the cleaning tool along a sealing surface of a coke oven door or door jamb. A spring between the rod and tubular support member urges the cleaning tool against the sealing surface and the friction between the scraper portion of the cleaning tool and the sealing surface pivots the cleaning tool and arm member relative to the lever members so that only one scraper contacts the sealing surface during the cleaning operation.

3,741,807

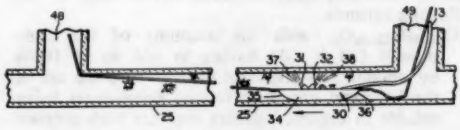
SEWER TREATMENT TO KILL TREE ROOTS AND OTHER ORGANIC GROWTH THEREWITHIN

Frederick F. Horne, Carmel Valley, Calif., assignor to Airrigation Engineering Company, Inc., Carmel Valley, Calif.

Continuation-in-part of application Ser. No. 850,321, Aug. 6, 1969, which is a continuation-in-part of application Ser. No. 760,822, Sept. 19, 1968, both now abandoned. This application Mar. 10, 1971, Ser. No. 122,738

Int. Cl. A01n *17/06;* B08b *9/02*

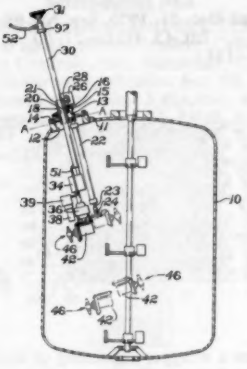
U.S. Cl. 134—24 9 Claims



A composition for killing plant roots inside sewers, comprises an alkali metal alkyl dithiocarbamate in an amount of about 30%, a biodegradable liquid nonionic surfactant in an amount of about 12%, and water making up the remainder. One method for treating the sewer pipes comprises coating the inside wall of the pipe and any roots or other growth inside the pipe with the composition in the form of a foamy film by spraying it thereon or on the upper portion thereof, as from a continuously moving device. Preferred apparatus for so treating the sewer pipes comprises a sled having bottom skid means, a low center of gravity and a spray system mounted on said sled having generally upwardly directed nozzles, and means for pulling the sled through a pipe while supplying it with the composition under pressure. Another method comprises soaking with the solution diluted to about 2% of the

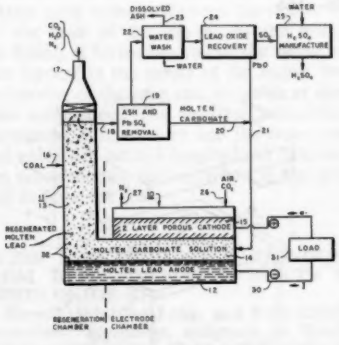
methyldithiocarbamate, this being done by plugging the pipe and filling the pipe above the plug with the diluted solution. Special plugging apparatus is described.

3,741,808
TANK CLEANER
Lee F. Stalker, Louisville, Ky., assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Aug. 12, 1970, Ser. No. 63,106
Int. Cl. B05b *3/10; B08b 3/02, 9/08*
U.S. Cl. 134—58 R **8 Claims**



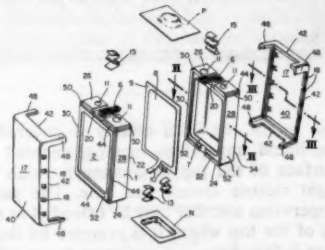
A portable high pressure tank cleaning apparatus with a linear movable tubular member that is also rotatably and eccentrically adjustably secured to a base. A cleaning head is located on one end of the linear movable member. The linear movability and rotatable adjustability of the member on the base permits the cleaning head to be positioned at different positions in the tank.

3,741,809
METHODS AND APPARATUS FOR THE POLLUTION-FREE GENERATION OF ELECTROCHEMICAL ENERGY
Michael Anbar, Palo Alto, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.
Filed May 13, 1971, Ser. No. 142,980
Int. Cl. H01m *29/04*
U.S. Cl. 136—86 A **4 Claims**



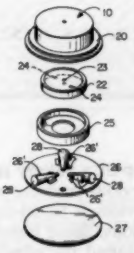
Methods and apparatus for the pollution-free generation of electrochemical energy from coal, hydrocarbons or other carbonaceous fuels by a cyclic operation wherein a metal such as lead is oxidized in an electrochemical cell delivering electromotive force, with the resulting lead oxide then being reduced in a molten salt melt within a regeneration chamber by the addition thereto of the fuel. The reduced lead metal is then returned to the cell for the next cycle. A useful salt melt for employment in the regeneration chamber comprises admixed alkali metal carbonates, and preferably a melt of this character is employed both as the vehicle in which the lead is reduced by the fuel as well as for the electrolyte in the cell. Passage of the lead and lead oxide between the respective cell and regeneration zones can be continuous or intermittent. The total operation is carried out without formation of pollutant gases, and only CO_2, N_2 and H_2O vapors are vented. Any sulfur present in the fuel is converted to lead sulfate and is removed from the salt, usually by treatment of a sidestream.

3,741,810
BATTERY CONSTRUCTION
James R. Dafler, Yardley, and Richard P. Niederberger, Pineville, Pa., assignors to ESB Incorporated
Filed July 6, 1971, Ser. No. 159,815
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 A **7 Claims**



An air depolarizable galvanic battery construction is disclosed. The battery includes a vessel structure having a portion thereof comprised of at least one air electrode. A closure means overlies the air electrode for preventing direct contact of foreign objects with the air electrode to thereby protect the air electrode from being damaged. The closure means is provided with air access openings and is disposed in spaced relation to the air electrode to permit circulation of air between it and the air electrode.

3,741,811
BATTERY ACTUATED BY LINEAR AND ANGULAR ACCELERATION
Joseph D. Coury, Wheaton, Md., assignor to the United States of America as represented by the Secretary of the Army
Filed Dec. 20, 1971, Ser. No. 209,795
Int. Cl. H01m *17/06*
U.S. Cl. 136—90 **4 Claims**



A self actuated battery is disclosed which is supplied with an electrolyte from a self opening ampule. When the

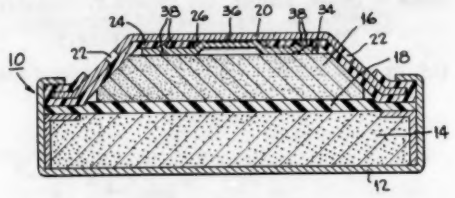
battery is spinning on its cylindrical axis and subjected to axial acceleration, a diaphragm across the end of the ampule is punctured by a novel and unique cutter which responds to the combination of linear and angular acceleration forces, thereby allowing the electrolyte to flow from the ampule through a filled channel into the battery cells.

3,741,812

BATTERY HAVING GAS PERVIOUS, LIQUID IMPERVIOUS MEMBER SEALED OVER HOLE IN TOP

Patrick J. Spellman and John E. Oltman, Madison, and Gerald Sanden, Verona, Wis., assignors to ESB Incorporated

Filed Nov. 3, 1971, Ser. No. 195,371
Int. Cl. H01m 21/00
U.S. Cl. 136—107 10 Claims



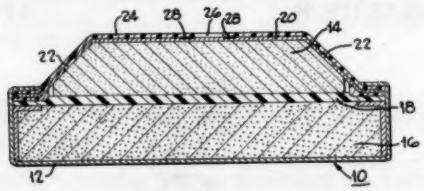
A hole in the top of a battery is covered by a gas pervious, liquid impervious member secured to the interior surface of the top in a manner which provides a liquid-tight closure around the hole. The gas pervious, liquid impervious member may be extended to and around the edge of the top where it is crimped by the container and where it functions as a grommet to provide a liquid-tight closure around the perimeter of the top. The gas pervious, liquid impervious member may be crimped between the top and an electrically conductive current collector which is secured to the top. Constructions are illustrated in which the gas pervious, liquid impervious member is electrically nonconductive, while other constructions are shown in which the member is conductive.

3,741,813

BATTERY HAVING GAS PERVIOUS, LIQUID IMPERVIOUS MEMBER SEALED OVER HOLE IN TOP

Bernard C. Bergum, Monona, and Trygve Lonnebotn, Madison, Wis., assignors to ESB Incorporated

Filed Nov. 3, 1971, Ser. No. 195,370
Int. Cl. H01m 21/00
U.S. Cl. 136—107 10 Claims



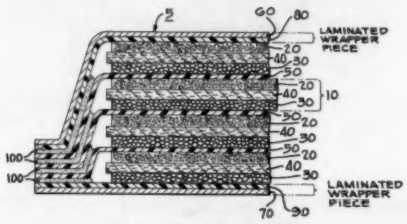
A hole in the top of a battery is covered by a gas pervious, liquid impervious member secured to the top in a manner which provides a liquid-tight closure around the hole. The gas pervious, liquid impervious member may be extended to and around the edge of the top where it is crimped by the container and where it functions as a grommet to provide a liquid-tight closure around the perimeter of the top. The gas pervious, liquid impervious member may be crimped between the top and an electrically conductive contact member which is secured to the top. Constructions are illustrated in which the gas pervious, liquid impervious member is electrically nonconductive, while other constructions are shown in which the member is conductive.

3,741,814

BATTERY HAVING WRAPPER COMPRISING LAMINATES OF METAL AND ELECTRICALLY CONDUCTIVE PLASTIC

John M. Bilhorn, Edgerton, Wis., assignor to ESB Incorporated

Filed Dec. 21, 1970, Ser. No. 99,985
Int. Cl. H01m 21/00
U.S. Cl. 136—111 8 Claims



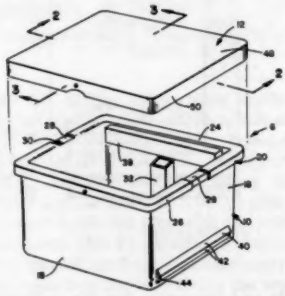
A battery has a wrapper consisting of two pieces sealed around their perimeters. Each wrapper piece comprises a laminate of metal and electrically conductive plastic, the conductive plastic in each of the laminates being in contact with an end electrode within the battery. The wrapper pieces are closed around their perimeters to produce a liquid impervious sealed battery. Preferably, the metal in each of the two wrapper laminates comprises a foil of steel. The laminated wrapper pieces may be used to enclose either multi-cell or single cell batteries.

3,741,815

RAILROAD SIGNAL BATTERY BOX

Fred D. Peterson, Belmont, Calif., assignor to Peterson Products of San Mateo, Inc., Belmont, Calif.

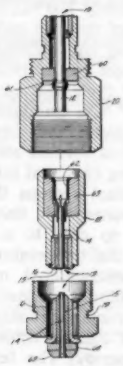
Filed Jan. 25, 1972, Ser. No. 220,570
Int. Cl. H01m 1/04
U.S. Cl. 136—166 8 Claims



A box for storing batteries for railroad signal backup systems in the ground. A receptacle is constructed of a lightweight, thin-walled fiberglass material and is closed with a

cover removably placed over an open top of the receptacle. Means are provided to lock the cover to the receptacle, to permit air breathing while the receptacle is closed, and to pass cables buried in the ground through the receptacle bottom into the receptacle interior while preventing ground moisture from entering the receptacle. A wooden terminal strip is provided for the formation of electrical connections and anti-flotation lobes prevent a rising of the partially buried battery box when the ground water level rises above the receptacle bottom.

3,741,816
THERMOCOUPLE STRUCTURES
Edmond M. Wagner, Sierra Madre, Calif., assignor to Jade Controls, Inc., Montclair, Calif.
Continuation-in-part of application Ser. No. 734,512, June 3, 1968, now Patent No. 3,556,864, dated Jan. 19, 1971. This application Oct. 21, 1970, Ser. No. 82,762
Int. Cl. H01v *1/06*
U.S. Cl. 136—228 **13 Claims**



A thermocouple is joined to a coaxial lead cable by a separable connector. The cold thermocouple junctions are formed at the connector, which comprises a sleeve, a nut having male threads, and a fitting having a cavity with mating female threads. The fitting is attached to the thermocouple tube so the thermocouple inner wire extends into the cavity, and the sleeve is attached to the outer conductor of the lead cable, so the inner conductor of the lead cable extends through the sleeve. The nut fits around the base of the sleeve. As the nut is screwed into the fitting, it forces the end of the sleeve to seat on a shoulder formed in the cavity of the fitting, thereby sealing the interior of the tube and the cable at their junction from the atmosphere. The electrical connection between the thermocouple inner wire and the inner conductor of the lead cable has limited longitudinal freedom of movement to accommodate for variations in the sleeve seating required to form the seal.

3,741,817
PROCESS FOR PRODUCING MONOCRYSTALS FROM III–V COMPOUND MELTS WITH A BORON OXIDE RIM
Klaus Bienert, Winfried Lang, and Fritz Kremser, Burghausen-Obb., Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe m.b.H., Postfach, Germany
No Drawing. Filed July 6, 1970, Ser. No. 52,751
Claims priority, application Germany, July 7, 1969, P 19 34 369.2
Int. Cl. B01j *17/18;* **C01b** *27/00*
U.S. Cl. 148—1.6 **3 Claims**

A process for producing monocrystals from a melt of III–V compounds containing a component which is volatile at the melting point of the compound, which comprises achieving the stoichiometry of the III–V compound by setting the vapor pressure of the volatile component, coating the surface of the melt of said III–V compound with an area, preferably a rim, of boron oxide melt, and drawing a monocrystal from the melt.

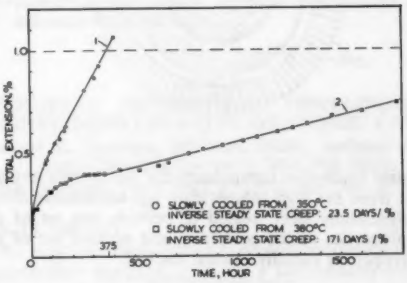
3,741,818
METHOD OF FABRICATING A COMPOSITE SEAL HAVING A REFRACTORY OXIDE SURFACE
Alan John Surrall, Redditch, England, assignor to British Leyland Truck and Bus Division Limited, Leyland, England
No Drawing. Filed Jan. 12, 1972, Ser. No. 217,388
Claims priority, application Great Britain, Jan. 26, 1971, 3,133/71
Int. Cl. C23c *11/00*
U.S. Cl. 148—6.3 **3 Claims**

A method of manufacturing a counterface seal for a rotary disc-type matrix of a regenerative heat-exchanger comprises: forming a composite structure, consisting of a counterface element and heat-resistant support pad, by brazing highly-compacted blocks of a high-temperature material onto the support pad; thermally converting the composite structure to produce the required composition at the working surface of the counterface element; and lapping that surface to achieve the requisite flatness.

ERRATUM

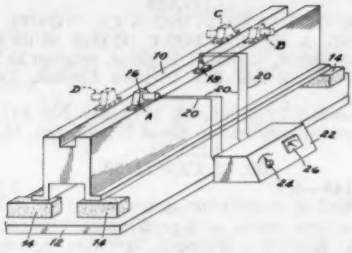
For Class 148—6 see:
Patent No. 3,741,747

3,741,819
METHOD OF PREPARING LOW DENSITY WROUGHT ZINC ALLOY WITH IMPROVED STRENGTH AND LOW TEMPERATURE DUCTILITY
Pierre Chollet, Pierrefonds, and Edouard Gervais, Montreal, Quebec, Canada, assignors to Noranda Metal Industries Limited, Toronto, Ontario, Canada
Original application Nov. 27, 1968, Ser. No. 779,377. Divided and this application Jan. 20, 1971, Ser. No. 108,199
Claims priority, application Canada, Sept. 24, 1968, 30,768
Int. Cl. C22f *1/16*
U.S. Cl. 148—11.5 R **15 Claims**



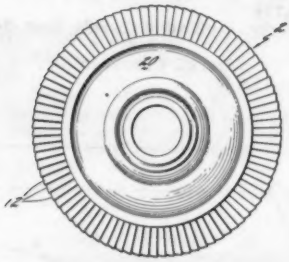
A method of heat treating a wrought alloy consisting essentially of 18–30% aluminum, up to 3% copper, up to 0.10% magnesium, up to 0.10% lithium and the balance zinc apart from incidental impurities, which comprises slow cooling said alloy from between about 380° C. and about 290° C.

3,741,820
METHOD FOR STRESS RELIEVING METAL
August G. Hebel, Jr., and August G. Hebel III, both of 1257 18th St., Detroit, Mich. 48216
Filed Dec. 7, 1970, Ser. No. 95,852
Int. Cl. C21d 1/04
U.S. Cl. 148—12.9 16 Claims



The method for stress relieving metal by vibration wherein the frequency locations of vibrational resonant peaks are found in the stressed metal and the metal is vibrated at a preferred stress relieving frequency to change the frequency locations of these resonant peaks. When the resonant peaks stabilize in new frequency locations, stress removal is complete. The preferred stress relieving frequency is selected from the vibrational response characteristics of the metal and is very efficient in relieving stresses.

3,741,821
PROCESSING FOR INTEGRAL GAS TURBINE DISC/BLADE COMPONENT
Roy L. Athey, North Palm Beach, and Joseph B. Moore, Jupiter Tequesta, Fla., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed May 10, 1971, Ser. No. 141,529
Int. Cl. C22f 1/10
U.S. Cl. 148—13.1 4 Claims



Integral blade/disc components for gas turbine engines, formed from the high temperature age-hardenable alloys, are differentially heat treated to provide one set of primary properties at the periphery and another set of primary properties radially inward thereof.

3,714,822
HIGH-STRENGTH STEEL
Alan T. Gorton, St. Paul, Minn., assignor to North Star Steel Company, St. Paul, Minn.
Filed July 14, 1971, Ser. No. 162,451
Int. Cl. C21d 1/28; C22c 39/20
U.S. Cl. 148—36 1 Claim
A high-strength ferrous alloy characterized by high yield strength, high ductility and high impact strength. The composition includes as alloying elements manganese, nickel, carbon, silicon, chromium and vanadium. The balance is iron. After hot rolling, the bar is normalized and then air cooled. The alloy is particularly, though not exclusively, useful as anchor bolt material.

3,741,823
METHOD OF FORMING FIRST ORDER TRANSITION FILMS
James M. Lommel, Schenectady, N.Y., assignor to General Electric Company
Original application Nov. 18, 1968, Ser. No. 776,619, now Patent No. 3,607,460. Divided and this application Oct. 26, 1970, Ser. No. 84,176
Int. Cl. H01f 1/02
U.S. Cl. 148—103 2 Claims
Thin films of iron-rhodium exhibiting a broadly hysteretic first order transition between the ferromagnetic and antiferromagnetic states are produced by sequentially depositing iron and rhodium films upon a refractory substrate at a pressure in the range of 1×10^{-6} torr, annealing the structure in a vacuum of 1×10^{-6} torr at a temperature of approximately 700° C. for 1 hour to produce a complete diffusion of the iron and rhodium layers, and subsequently subjecting the diffused layers to a second anneal in an atmosphere greater than 10 parts per million oxygen in a thermal cycle that includes slowly heating the structure to 400° C., maintaining the 400° C. for approximately 10 minutes and slowly cooling to room temperature. Films thus formed are advantageously employed in the recording of digital information by electron beam heating individual regions through a first order transition to the ferromagnetic state whereupon the regions are permitted to cool to a biasing temperature slightly higher than the temperature of transition back to an antiferromagnetic state. A magnetic field then is applied to the entire film to magnetize only those regions of the film in the ferromagnetic state and readout of the recorded information can be achieved by conventional electron beam microscopy. The ferromagnetism of the film subsequently can be erased by cooling the film below the transition temperature to the antiferromagnetic state or by the application of a strain to the film.

3,741,824
METHOD TO IMPROVE THE WELDABILITY AND FORMABILITY OF NICKEL-BASE SUPERALLOYS
David Scott Duvall, Middletown, and William A. Owczarski, Cheshire, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
No Drawing. Original application July 19, 1968, Ser. No. 746,011. Divided and this application Oct. 29, 1970, Ser. No. 85,232
Int. Cl. C21d 1/00, 9/50
U.S. Cl. 148—127 1 Claim
A procedure for improving the capacity of the advanced nickel-base superalloys to be welded without cracking is described. Concurrently, the process also provides enhanced room temperature formability. Basically, the procedure involves an overaging heat treatment of the material to produce a coarse γ' precipitate distributed throughout the alloy microstructure, a condition of low strength and enhanced room temperature ductility.

3,741,825
METHOD OF DEPOSITING AN EPITAXIAL SEMICONDUCTOR LAYER FROM THE LIQUID PHASE
Harry Francis Lockwood, New York, N.Y., and Michael Ettenberg, Freehold, N.J., assignors to RCA Corporation
Filed July 8, 1971, Ser. No. 160,608
Int. Cl. H01l 7/38
U.S. Cl. 148—171 10 Claims
One or more epitaxial layers of a semiconductor material are deposited on a substrate by providing for each

epitaxial layer to be deposited a separate solution of a semiconductor material dissolved in a molten metal solvent with each solution being unsaturated with the semiconductor material. A body of the semiconductor material is brought into contact with the solution and some of the body is dissolved in the solution so as to exactly saturate the solution. The body is then removed from the exactly saturated solution and the substrate brought into contact with the solution. The solution is cooled to deposit the epitaxial layer on the substrate. To deposit a plurality of epitaxial layers on the substrate, the substrate is successively brought into contact with each solution with the body of semiconductor material preceding the substrate into each solution so that each solution is exactly saturated with the semiconductor material when the substrate is brought into the solution.

3,741,826

METHOD OF MANUFACTURING VARIABLE CAPACITANCE DIODES

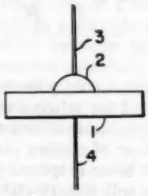
Masaichi Shinoda, Sagamihara, and Masaru Igarashi, Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of abandoned application Ser. No. 663,639, Aug. 28, 1967. This application Sept. 18, 1970, Ser. No. 73,641

Claims priority, application Japan, Aug. 29, 1966, 41/56,824

Int. Cl. H01l *7/46*

U.S. Cl. 148—178 **4 Claims**



Described is a variable capacitance diode with hyperabrupt junction and the method of manufacture thereof. The diode comprises an n-type germanium wafer, onto which a dot has been alloy diffused. The dot comprises bismuth with from 0.01 to 10% by weight of gallium. A small amount of an n-type impurity such as antimony or arsenic may be added.

3,741,827

AGE HARDENING PROCESS AND PRODUCT

Maurice Alfred Reynolds, Bodicote, near Banbury, and Ronald William Elkington, Adderbury West, near Banbury, England, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,610

Claims priority, application Great Britain, Feb. 12, 1970, 6,895/70

Int. Cl. C22f *1/04*

U.S. Cl. 148—159 **4 Claims**

An aluminium - zinc-magnesium-copper alloy includes 0.12–0.20% zirconium and 0.2–0.4% silver and develops high strength and good stress corrosion characteristics when subjected to solution heat treatment and quenching, followed by artificial ageing. It is an advantage of this alloy that it is relatively insensitive to the rate of quenching. Particularly satisfactory properties are developed when the quenched alloy is heated to ageing temperature at a rate not exceeding 30° C./hour.

3,741,828

GAS GENERATOR COMPOSITIONS CONTAINING A SUBSTITUTED GLYOXIME

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Aug. 16, 1967, Ser. No. 661,504

Int. Cl. C06b *1/04*

U.S. Cl. 149—19 **10 Claims**

High performance gas generator compositions to be used on board missiles to provide secondary power. An hydroxyl-, amino-, or halogen-substituted glyoxime is used.

3,741,829

HIGH-ENERGY PROPELLANTS WITH POLYMERIC FLUORO-AMINO BINDER AND HYDRAZINE DIPERCHLORATE

Edward A. Hunter, Westfield, and Adolf H. Muenker, Piscataway Township, Middlesex County, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Feb. 28, 1963, Ser. No. 262,293

Int. Cl. C06d *5/06*; C08g *22/00*

U.S. Cl. 149—19 **12 Claims**

12. Process of preparing a cured high-energy polyurethane which comprises reacting a poly(difluoramino ether) alcohol with a compatible organic triisocyanate that crosslinks through formation of urethane functions replacing hydroxyl groups of the alcohol and with hydrazine diperchlorate.

3,741,830

STABILIZED PROPELLANT COMPOSITIONS AND METHODS FOR THEIR PREPARATION

Robert M. Wall, Brigham City, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed July 12, 1965, Ser. No. 471,796

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 **34 Claims**

Certain organic compounds, called stabilizers, have been disclosed as being useful in preparing solid propellants having hydrazinium diperchlorate (HP_2) as an oxidizer. By use of these stabilizers, the usual hydrocarbon polymer fuel binder, e.g., polyalkadiene fuel binder, are rendered compatible with HP_2 where previously HP_2 and the binder reacted resulting in a hard brittle mass unsuitable as a propellant. The stabilizing compositions of the invention usually are sulfur and nitrogen containing compounds wherein the sulfur and nitrogen are usually bound in a heterocyclic ring and have (a) weakly basic characteristics and/or (b) aliphatic substituents and/or (c) heterocyclic substituents.

3,741,831

EXPLOSIVE COMPOSITION CONTAINING A VINYLIDENE CHLORIDE POLYMERIC LATEX

Richard L. Brennan, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 5, 1972, Ser. No. 259,842

Int. Cl. C06b *1/04*

U.S. Cl. 149—41 **13 Claims**

An explosive composition is formed by mixing together a particulate inorganic oxidizer, a substantially saturated aqueous solution of magnesium nitrate, ammonium nitrate, or an aqueous ammoniacal ammonium nitrate solution, a setting agent which sets said composition to a solid material and a small but effective amount of a polymeric organic latex to increase the physical strength of said explosive and permitting the mixture to set. Chlorine containing organic polymeric latexes also increase the sensitivity of the explosive composition.

3,741,832

LIQUID OXIDIZERS CONTAINING NF_2 GROUPS THICKENED WITH POLYMERIC COMPOUNDS

Lawrence Spenadel, Fanwood, and John P. Longwell, Westfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Feb. 28, 1963, Ser. No. 262,294
Int. Cl. C06d *5/08*
U.S. Cl. 149—109 6 Claims

1. Method of improving the stability and burning characteristics of a liquid CNF_2 oxidizer selected from the group consisting of NF_2-substituted alkanes, NF_2-substituted cycloalkanes, NF_2-substituted dialkyl ethers, and NF_2-substituted epoxy alkanes containing from 2 to 10 carbon atoms per molecule with an NF_2 group linked to each carbon atom, which consists in dissolving into the liquid CNF_2 oxidizer a sufficient amount of a solid polymer selected from the group consisting of polymethylmethacrylate, of polybutadiene-NF_2 adduct which contains from 1 to 2 NF_2 group per monomeric unit, and mixtures thereof to give the resulting solution of the liquid oxidizer a viscosity in the range of 2 to 9 poises at 20° C.

3,741,833

EXPLOSIVE COMPOSITION CONTAINING A GLYCOL AND A HYDROXY ALKYL ETHER OF A POLYSACCHARIDE

Errol Linton Falconer, Mont Saint-Hilaire, Quebec, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada

No Drawing. Filed Feb. 29, 1972, Ser. No. 230,521
Int. Cl. C06b *1/04*
U.S. Cl. 149—109 5 Claims

A substantially non-aqueous explosive slurry composition comprising essentially a suspension of inorganic oxygen-supplying salt in a fluid matrix, said fluid matrix comprising at least one lower aliphatic glycol selected from the group consisting of ethylene glycol, diethylene glycol, propylene glycol and dipropylene glycol thickened with a material selected from the group consisting of hydroxyethyl and hydroxypropyl ethers of polysaccharides and mixtures thereof.

3,741,834

METAL TARNISH REMOVERS

Ralph P. Williams and Rector P. Louthan, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,141
Int. Cl. C11d *3/28, 3/34*
U.S. Cl. 252—542 10 Claims

A composition and method suitable for removal of tarnish from metal surfaces, such as copper, silver, tin, lead, zinc, cadmium, and alloys thereof. The composition comprises one or more mercaptoamides or mercaptoimides, optionally including an abrasive and/or diluent.

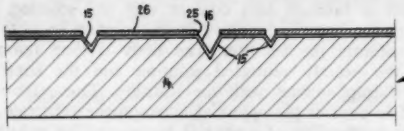
3,741,835

METHOD OF PREPARING COPPER-PLATE PRINTING PLATES FOR PRINTING

Gualtiero Giori, Lausanne, Switzerland, assignor to De la Rue Giori S.A., Lausanne, Switzerland

Filed May 1, 1970, Ser. No. 33,853
Claims priority, application Switzerland, May 8, 1969, 7,073/69
Int. Cl. B44n *3/02;* C23g *1/20*
U.S. Cl. 156—14 4 Claims

An engraved printing plate having an ink retaining surface of copper is prepared for printing by applying a layer of a material such as matt chrome which is repellent to ink but accepts a wetting agent over all of the surface. A protective coating is applied to the non-engraved part of the surface. This coating may be powdered bitumen applied to a film of printing ink and then fused by heat treatment. The layer of chrome is then removed from the engraved part of the surface by chemical or electro-



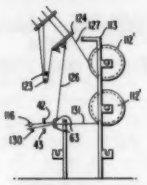
lytic means and the protective coating is then removed by solvents.

3,741,836

METHOD OF SPLICING SYNTHETIC THERMOPLASTIC CARPET YARN ENDS

Willie V. Williams, 701 S. Green St., Dalton, Ga. 30720

Original application Nov. 6, 1968, Ser. No. 773,773, now Patent No. 3,616,054. Divided and this application July 19, 1971, Ser. No. 164,004
Int. Cl. B65h *69/08;* D04h *3/14*
U.S. Cl. 156—158 4 Claims



Yarn ends from substantially spent plural beams of carpet yarns are prepared for splicing with similar yarn ends of new full beams by a series of orderly preparation steps. Following this, each set of trailing yarn ends from a previous single exhausted beam is spliced quickly by the operation of the invention splicing apparatus with the yarn ends of a single new beam, and the identical splicing operation is repeated for a required number of new beams utilized in producing carpet of a given width.

3,741,837

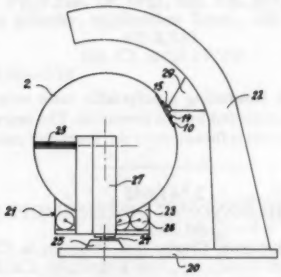
METHOD OF PRODUCING VULCANIZABLE SHEET MATERIAL WITH MULTIFILAMENT GLASS CORD

Alfred Marzocchi, Cumberland, R.I., and Robert R. McAuslan, Seekonk, Mass., assignors to Owens-Corning Fiberglas Corporation

Filed May 17, 1971, Ser. No. 144,169
Int. Cl. B31c *81/00*
U.S. Cl. 156—171 5 Claims

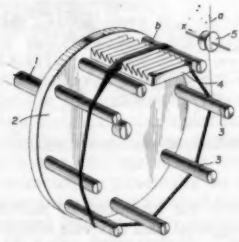
Glass cord composed of a plurality of gathered-together subelements such as filaments, strands, yarns and the like is combined with vulcanizable elastomeric stock material in a defined manner and according to prescribed methods as to yield a product in the nature of a curable preform or building block which is combinable with other similar building blocks or preforms composed of glass cord lengths and elastomeric stock to yield second and/or third stage building blocks or preforms which are ultimately of utility in erecting, constructing or building, by molding or other techniques, cured elastomeric products such as tires, belts and other rubber goods containing a glass cord reinforcement disposed or arranged in a particularly desirable manner as to reinforcedly impart to the ultimate structure the desired and/or optimum characteristics and/or properties of the glass cord and, of course, the inherent strength properties of the individual glass filaments making up the cord.

3,741,838
MANDREL FOR USE IN AND A METHOD OF PRODUCING CONTAINERS AND A MACHINE FOR EMPLOYING THE METHOD
Birte Christensen and Borge Christensen, both of Tunemarken pr. 2690 Karlslunde, Denmark, and Helge Hovad and Karl Erik Hovad, both of Kvikmarken 22, 2860 Soborg, Denmark
Filed Mar. 18, 1969, Ser. No. 808,081
Claims priority, application Denmark, Mar. 18, 1968, 1,134/68
Int. Cl. B65h *81/00*
U.S. Cl. 156—173 3 Claims



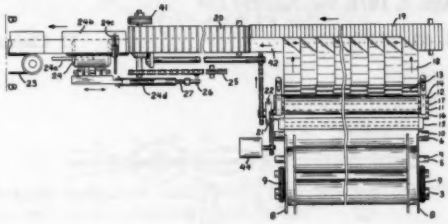
A mandrel for use in the production of containers wherein a filament or strip shaped material is wound on to the mandrel, the mandrel consisting of a bladder core wholly or partially enclosed within a flexible jacket and having stiffening members inserted between the bladder core and the jacket. Said members are detachably or pivotally connected to a coupling member for mounting the mandrel on a shaft. Also a method of performing the winding process is described as well as machines for carrying out the method.

3,741,839
METHOD OF MANUFACTURING FLEXIBLE OPTICAL FIBER STRAND FOR TRANSMITTING IMAGES AND APPARATUS THEREFOR
Yoshio Komiya, Tokyo, Japan, assignor to Canon Inc., Tokyo, Japan
Filed Nov. 3, 1969, Ser. No. 873,580
Claims priority, application Japan, Nov. 7, 1968, 43/81,435
Int. Cl. B65h *81/00*
U.S. Cl. 156—174 1 Claim



Method and apparatus for manufacturing flexible optical fiber bundle for transmitting images in which the layers of fibers are formed by winding the fibers on a slanted surface formed on a winding drum.

3,741,840
METHOD FOR PRODUCING CONTINUOUS COMPRESSED HONEYCOMB
John L. Booth, 1317 Tangelo Isle, Fort Lauderdale, Fla. 33315
Original application Nov. 14, 1969, Ser. No. 876,665, now Patent No. 3,630,801. Divided and this application June 11, 1971, Ser. No. 152,444
Int. Cl. B31d *3/02*
U.S. Cl. 156—197 10 Claims



A machine for making a continuous unexpanded honeycomb product from a single continuous web of unexpanded material that includes a severing assembly for longitudinally severing the web into a plurality of strips of material, an applicator assembly for applying longitudinally spaced, transverse strips of adhesive to the one face of each of the severed strips of material, an assembly for turning the severed strips into face to face engagement with one another, a conveyor assembly to press the adhesive strips of one strip of material against the adjacent strip of material to provide a multiple layer of joined strips of material while the strips of material are pinned to another, a flying saw assembly to transversely sever the multiple layer to be of a predetermined length, a stacking box assembly for joining one face of one multiple layer of adhered strips of material to a face of another multiple layer of adhered strips of material, and a trimmer assembly for trimming the joined multiple layers to a predetermined height. Adjustments are provided for severing different width strips, for controlling the application of adhesive strips, and for varying the thickness of the joined multiple layers. Also, during making of the honeycomb product the strips of material are partially severed to readily permit a block of honeycomb product being pulled apart to provide two honeycomb structures. Also a method of making honeycomb is disclosed.

3,741,841
PRODUCTION OF SYNTHETIC PAPERS
Takashi Toyoda, Yoshio Miyabe, and Yozo Ooba, Yokkaichi, Japan, assignors to Kabushiki Kaisha Oji Yuka Goseishi Kenkyujo, Tokyo-to, Japan
No Drawing. Filed June 23, 1971, Ser. No. 156,042
Claims priority, application Japan, July 6, 1970, 45/58,902; Aug. 21, 1970, 45/73,214, 45/73,215
Int. Cl. B29c *17/02*
U.S. Cl. 156—229 5 Claims

A polypropylene resin containing from 0.2 to 30 percent by volume of a fine filler for a paper-like layer is laminated onto at least one surface of a base layer film stretched in a longitudinal direction and formed from a mixture of polypropylene resin and an additive of a type and quantity such as to lower the lower limit of the temperature range wherein the resin is practically stretchable, and the composite structure thus obtained is heat

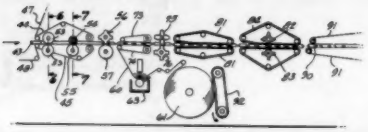
stretched in a transverse direction and then cooled as it is held in its stretched state. The additive can be a plasticizer polymer or a fine filler.

3,741,842

METHOD FOR THE FABRICATION OF AN ABSORBENT PAD WITH A BODY CONTACTING COVER

Curt G. Joa, Ocean Ridge, Fla.
(P.O. Box 1121, Boynton Beach, Fla. 33435)

Original application Aug. 15, 1969, Ser. No. 850,482, now Patent No. 3,666,611. Divided and this application Apr. 5, 1971, Ser. No. 131,550
Int. Cl. B32b *5/18*
U.S. Cl. 156—213 11 Claims



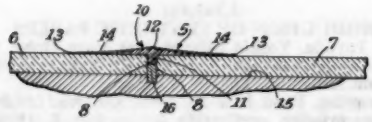
Absorbent pad having a pulp filler, wadding envelope, and body contacting cover outside the envelope which is shorter than the pad is long, thus to leave end margins of the pad uncovered. The apparatus and method for fabricating such a pad involves superimposing separate pulp mats, one of which is compressed before superimposition in order that the compressed mat functions as a flow distribution ply, subdividing the superimposed mats into discrete pad fillers with gaps therebetween, encasing the spaced pad fillers in a wadding envelope which is continuous across the gaps, cross sealing the envelope across the gaps to form a continuous wadding envelope tube with links interconnecting the spaced filler pads, and applying the body contacting cover sheet thereto.

3,741,843

METHOD OF CONNECTING TWO MEMBERS WITH AN ELASTOMERIC HINGE

Anthony Louis, Los Angeles, Calif., assignor to Aquaria, Inc., Los Angeles, Calif.

Continuation-in-part of abandoned application Ser. No. 45,408, June 11, 1970. This application Mar. 1, 1971, Ser. No. 122,572
Int. Cl. B32b *3/02*; B29c *27/00*
U.S. Cl. 156—244 4 Claims



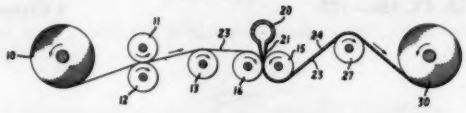
A hinge of elastomeric material for connecting adjacent edge portions of two members to connect the same so one can be swung from a coplanar or angular position relative to the other to a different angular position relative to said other member. The hinge is formed of silicone rubber or other silicone or siloxane having many of the properties characteristic of rubber, the same being applied, while in an uncured, extrudable form, upon surfaces adjacent the mentioned edge portions, and when cured having the above-mentioned rubber-like properties.

3,741,844

HOT MELT PROCESS FOR FORMING RESIN LAYER ON POLYURETHANE FOAM

A. William Schwartz, Larchmont, N.Y., assignor to Tenneco Chemicals Inc., Saddle Brook, N.J.

Filed June 3, 1971, Ser. No. 149,689
Int. Cl. B29c *3/00*
U.S. Cl. 156—244 10 Claims



A process for laminating a polyolefin resin onto a polyurethane foam is provided by this invention. The resin is melted and the molten resin is flowed onto the foam and cooled.

3,741,845

DIELECTRIC BONDING OF THERMOPLASTIC MASSES

Eugene G. Castagna, Clark, N.J., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 37,397, May 11, 1970, which is a continuation of application Ser. No. 681,076, Nov. 7, 1967, both now abandoned. This application Jan. 18, 1971, Ser. No. 107,425
Int. Cl. B29c *19/04*
U.S. Cl. 156—273 5 Claims

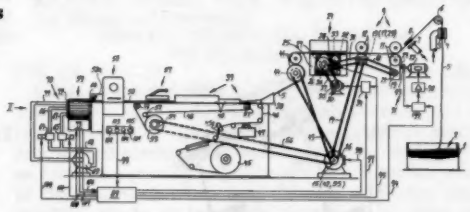
Thermoplastic masses are dielectrically bonded by contacting in a dielectric bonding field with a blend of normally solid poly-1-alkene, such as polypropylene, and about 1 to 20% by weight of elastomeric polymer of acrylonitrile and butadiene.

3,741,846

MACHINE FOR THE PRODUCTION OF FILTER ROD SECTIONS OR THE LIKE

Heinz Greve, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG., Bergedorf, Germany

Filed Apr. 5, 1971, Ser. No. 131,167
Claims priority, application Germany, Apr. 11, 1970, P 20 17 360.8
Int. Cl. G05g *15/00*
U.S. Cl. 156—360 22 Claims



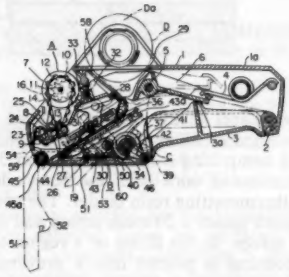
Filter rod sections are produced by moving a tow of filamentary filter material past a device which showers the filaments with atomized plasticizer and by thereupon converting the thus treated tow into a rod-like filler which is wrapped to form a filter rod. The latter is severed to yield a succession of filter rod sections which are transported by a fluted drum to storage or to a machine for the production of filter-tipped smokers' products. Groups of filter rod sections are withdrawn from the flutes of the drum at regular intervals for weighing to thus determine the quantity of filter material and/or plasticizer. The results

of the weighing operation are utilized to adjust the feeding mechanism for the tow and/or plasticizer if the measured quantities deviate from desired quantities. The feeding mechanism for the tow employs rolls which can be driven at a variable speed to thereby subject the filaments of the tow to a more or less pronounced stretching action. The feeding mechanism for the plasticizer employs a rotary brush which removes plasticizer from the periphery of a drum dipping into a supply of plasticizer, and a variable-speed drive for the drum.

3,741,847
HAND LABELER

Yo Sato, Tokyo-to, Japan, assignor to Kabushiki Kaisha Sato Kenkyujo, Tokyo-to, Japan

Filed Jan. 25, 1971, Ser. No. 109,519
Claims priority, application Japan, Jan. 31, 1970, 45/8,837
Int. Cl. B41l *19/00*
U.S. Cl. 156—384 2 Claims



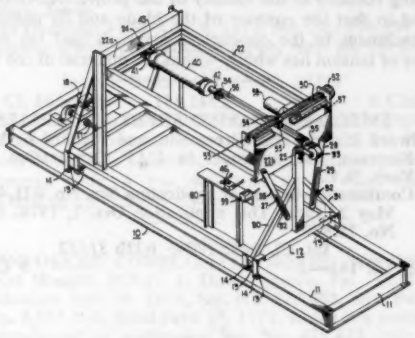
A hand labeler having a backing or base paper strip laminately supporting a label paper to constitute a label tape is sharply curved and doubled back near one end thereof away from the label paper and is provided with a specific slack in a narrow gap between opposed guides. When the end is pulled to take up the slack, the base paper is separated further from the label paper, and when the laminated combination of the label paper and the base paper strip is advanced as the end is held immovable, the base paper is separated still further from the label strip.

3,741,848
STITCHING MACHINE FOR RENEWING PNEUMATIC TIRES

Blaine F. Walters, 517 W. Main St.; William E. Stutzman, 617 Tayman Ave.; and Ray S. Fink, 604 Tayman Ave., all of Somerset, Pa. 15501

Filed Aug. 26, 1971, Ser. No. 175,103
Int. Cl. B29h *17/00, 17/02*
U.S. Cl. 156—421 6 Claims

An improved stitching machine for rebuilding or renewing pneumatic tires, especially for rebuilding heavy-duty pneumatic tires bearing a lugged tread. The stitching machines comprises a fixed frame means having movably mounted thereon a carriage means which may be advanced and retracted longitudinally on the frame means. The carriage means includes a swivel frame means having operably mounted thereon roller means adapted to abut the surface of a tire being rebuilt. The roller means is preferably mounted on an arm which is operably connected to means, such as a piston, for urging the roller means against a tire being rebuilt at a pre-selected, constant force. The piston means is swivelly connected to the swivel frame. The roller means on said arm is further operably mounted in said swivel frame for transverse movement therein whereby said roller when forced by said piston means against a tire being rebuilt may move over the surface thereof along a desired, pre-selected path.

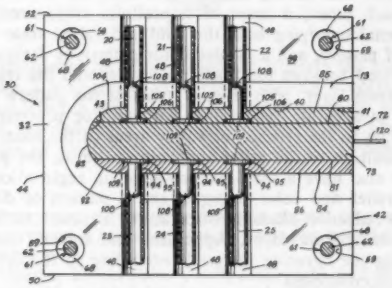


Suitable means are additionally provided for controlling the transverse movement of said roller.

3,741,849
METHOD OF JOINING TUBES TO MANIFOLD

John C. Hardy, Weatogue, Conn., assignor to Angelica Corporation, St. Louis, Mo.

Filed Feb. 8, 1971, Ser. No. 113,274
Int. Cl. B29b *1/14*
U.S. Cl. 156—500 3 Claims

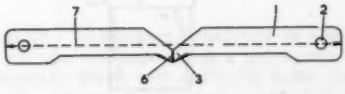


Apparatus and method for joining plastic tubes to a plastic manifold utilizing heat and pressure and an interlocking multi-part core.

3,741,850
PLASTICS WEB SLITTING AND SEALING DEVICE

Peter Edward Highfield and Gordon John Hill, Stevenage, England, assignors to British Visqueen Limited, London, England

Filed Aug. 20, 1970, Ser. No. 65,582
Claims priority, application Great Britain, Sept. 8, 1969, 44,343/69
Int. Cl. B32b *31/00*
U.S. Cl. 156—515 6 Claims



A device for simultaneously slitting and edge sealing a plastics web, comprising a resistance heater in the form of a flat, elongated blade attached at its ends to a pair

of conductors and provided with a projection of a longer edge which, in operation, projects through the path of the web and serves to cut and seal the web, the blade width being reduced in the vicinity of the projection, characterised in that the contour of the blade and its position of attachment to the conductors are such that the neutral line of tension lies wholly within the material of the blade.

3,741,851

EMBOSSED FOAMED SHEET MATERIALS

Edward R. Erb, East Greenville, and Richard L. Maass, Emmaus, Pa., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 821,409, May 2, 1969. This application Oct. 7, 1970, Ser. No. 78,878

Int. Cl. B44c *1/24;* **B32b** *31/22*

U.S. Cl. 161—2 **9 Claims**

Decorative sheet materials such as foamed vinyl floor coverings comprising, preferably, a base or substrate such as asbestos felt, a layer of foam or cellular resin material on the base having portions of different thickness providing a relief pattern, the foam of the lands having relatively large cells and the foam of the valleys being crushed and having smaller cells with cell walls bonded to each other, a layer of noncellular transparent resin material overlying both the land and valley areas of the relief pattern, and a printed color pattern or design being provided between the foam resin layer and the transparent resin layer, with colored areas of the pattern or design in accurate registration with and/or predetermined relation to the crushed or valley areas of the foam layer. In addition to the relief and color patterns, the product may also have a third pattern effect in registration with the relief and color patterns, i.e., a pattern of different light reflective characteristics at the exposed surface of the transparent layer. Apparatus and method for producing the covering materials according to the invention are also disclosed.

3,741,852

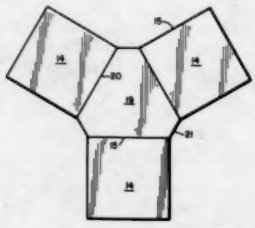
SEGMENTAL MULTIUNIT STUDY TABLE

Richard N. Keener, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

Filed June 3, 1971, Ser. No. 149,704

Int. Cl. B32b *3/10;* **A47b** *87/00*

U.S. Cl. 161—37 **4 Claims**



A segmental study table accommodating a number of students about a central nucleus table is provided by a hexagonal table having three long sides of equal length spaced by three short equal length sides, the long sides being engaged by wing tables presenting sides equaling the length of said long sides and mating therewith and forming substantially equal obtuse angles with the nucleus table short sides so as to provide between the wing tables equal space areas enlarging progressively outwardly from each short side of the nucleus table.

3,741,853

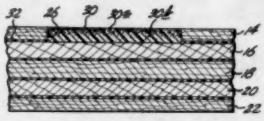
REPAIR OF WOOD PANELS

David M. Forsythe, Clackamas, and William J. Runckel, Portland, Oreg., assignors to Publishers Paper Co., Oregon City, Oreg.

Filed Aug. 6, 1970, Ser. No. 61,769

Int. Cl. B32b *3/02, 35/00*

U.S. Cl. 161—41 **7 Claims**



A plywood panel having a filled region of repair therein, and a method of filling such region. A filler composition is used comprising a mixture of from 3 to 10% by weight comminuted cork with the remainder being essentially a thermosetting resin binder. The cork has a particle size which passes a 20 mesh screen and is retained on a 40 mesh screen. In the filling of a region of repair, the filler composition is poured into a previously prepared hole and allowed to cure. During curing, particles of cork float to the surface of the filler composition, producing stratification of the mixture, with a layer rich in cork adjacent the surface of the region of repair.

3,741,854

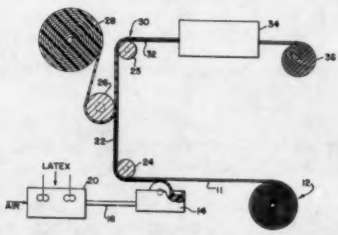
METHOD OF PREPARING A CELLULAR, URETHANE BACKED TUFTED RUG

Frank A. De Gioia, Dalton, Ga., assignor to General Latex and Chemical Corporation, Dalton, Ga.

Continuation of application Ser. No. 866,159, Oct. 13, 1969, which is a continuation of application Ser. No. 586,074, Oct. 12, 1966, both now abandoned. This application Nov. 10, 1970, Ser. No. 88,473

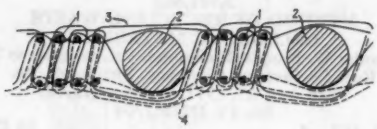
Int. Cl. D05c *15/04*

U.S. Cl. 161—67 **16 Claims**



The invention comprises a method of preparing a cellular urethane laminate by bonding a cellular polyurethane sheet material to a backing sheet material, for example of natural or synthetic fibers, with a foamable carboxylated latex containing pendant carboxylic and sulfonic acid groups and an amino compound. The laminate is heated to a temperature sufficient to cure the carboxylated latex and collapse the foamed carboxylated latex.

3,741,855
LOW FRICTION BEARING MATERIALS
Michael Banks Harrison, Bristol, and Robert Benion, Clevedon, Somerset, England, assignors to AMPE Industrial Products Limited, Somerset, England
Filed May 18, 1971, Ser. No. 144,560
Int. Cl. D03d *15/10*
U.S. Cl. 161—91 9 Claims

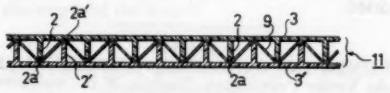


A bearing material comprises a woven fabric of mixed fibres of low friction material and fibres of high modulus material and particularly, carbon fibres.

3,741,856
NOVEL SEALANTS AND ADHESIVES
John Hurst, London, England, assignor to W. R. Grace & Co., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 676,652, Oct. 19, 1967. This application Feb. 28, 1969, Ser. No. 803,438
Claims priority, application Great Britain, Oct. 21, 1966, 47,419/66
Int. Cl. B32b *11/02*
U.S. Cl. 161—88 3 Claims

Novel structures suitable for the formation of waterproof and/or adhesive layers on surfaces, particularly of concrete, the structures comprising a sheet-like substrate and contiguous thereto a membrane of a waterproofing pressure-sensitive adhesive. The substrate may be a sheet-like support having the membrane adherent thereto or be in the form of a protective coating which can be physically removed from the membrane without substantial damage thereto. If desired, the structures may be in the form of a roll comprising alternate layers of the membrane and sheet-like substrate, one face thereof being substantially more readily physically separable from the membrane than the other face.

3,741,857
COMPOSITE LIGHT WEIGHT BOARD AND MANUFACTURE THEREOF
Tsutomu Kakutani; Tetsuhiko Hirata; Shogo Matsuda, all of Tokyo; Kenji Inagaki, Yokohama, and Hidetoshi Innami, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Nov. 19, 1971, Ser. No. 200,437
Claims priority, application Japan, Nov. 20, 1970, 45/102966
Int. Cl. B32b *1/00, 3/00, 31/00*
U.S. Cl. 161—127 3 Claims

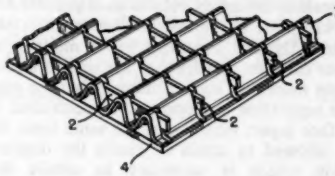


A composite panel member of thermoplastic resin comprising three constituents fused together at their mutually contacting points, the two constituents of which consist of two comb-sectioned sheets coupled with each other in a substantially opposite and in a longitudinally offset way, the remaining constituent consisting of an intermediate sheet arranged between the two comb members and in a zigzag and saw tooth like manner between the said both.

3,741,858
PRINTED CIRCUIT BOARD
Yoshio Fujiwara, Keiichi Naito, and Toru Odajima, Tochigi-ken, Japan, assignors to Sony Corporation, Tokyo, Japan
No Drawing. Filed Aug. 9, 1971, Ser. No. 170,334
Claims priority, application Japan, Aug. 10, 1970, 45/69,286
Int. Cl. B32b *5/02, 15/08, 15/14*
U.S. Cl. 161—185 6 Claims

A printed circuit board including an epoxy resin impregnated glass fiber board and a copper foil laminated thereon with an adhesive is shown. The adhesive is comprised of a phenoxy resin, a low molecular epoxy resin and a cross-linking agent therebetween.

3,741,859
REINFORCED CORRUGATED BOARD MEMBER
Kurt Wandel, R.F.D. 1, Downingtown, Pa. 19335
Application Apr. 30, 1969, Ser. No. 820,452, now Patent No. 3,589,964, dated June 29, 1971, which is a continuation-in-part of application Ser. No. 475,402, July 28, 1965. Divided and this application Aug. 14, 1970, Ser. No. 63,887
Int. Cl. B32b *3/28*
U.S. Cl. 161—137 8 Claims



A reinforced corrugated member wherein the member includes a corrugated sub-member having a corrugated web and facing web adhered thereto, a plurality of slits in the exposed flutes of the sub-member and a plurality of strips of reinforcing material secured in the slits.

3,741,860
SYNTHETIC PAPERLIKE FILM SUITABLE FOR WRITING AND PRINTING AND ITS PREPARATION
Hiro Otsubo, Yoichi Shin, Yoichi Kobayashi, and Makoto Sumiyoshi, Yokkaichi, Japan, assignors to Kabushiki Kaisha Oji Yuka Goseishi Kenkyujo, Chiyoda-ku, Tokyo-to, Japan
Filed Nov. 30, 1970, Ser. No. 93,714
Claims priority, application Japan, Nov. 28, 1969, 44/95,519; Mar. 12, 1970, 45/20,435; Aug. 26, 1970, 45/74,267
Int. Cl. B32b *5/16*
U.S. Cl. 161—162 14 Claims

A film of a high-impact polystyrene in which minute rubber particles are dispersed in a polystyrene resin matrix is biaxially drawn with a drawing factor (product of biaxial elongations) greater than 6 and then treated at a temperature above 30° C. with a solvent which exhibits swelling-inducing action with respect to the rubber particles, and thereafter these actions of the solvent are stopped by cooling the film to a temperature at which the solvent does not exhibit these actions.

3,741,861
METHOD FOR IMPROVING THE CHEMICAL DURABILITY OF OPAL GLASSES
André Andrieu, 3 Avenue de Stalingrad, Nemours, France
Filed Apr. 5, 1971, Ser. No. 130,905
Claims priority, application France, Mar. 27, 1970, 7011285
Int. Cl. C03c *23/00*
U.S. Cl. 161—166 8 Claims

The present invention relates to a process for improving the chemical durability of glass articles and, particularly, to a thermal treatment which modifies a thin surface layer on glass articles that are opal because of phase separation therein in such a manner that the phenomenon of phase separation is suppressed or controlled within this thin surface layer; whereas, at the same time, the interior glass is allowed to attain or retain the degree of phase separation which is necessary to obtain the desired opalescence. This process is of special interest for products formed from glasses with immiscible vitreous phases which are likely to be exposed, during use, to the action of relatively reactive chemical solutions such as water, acids, alkaline wash waters, or phosphate wash waters.

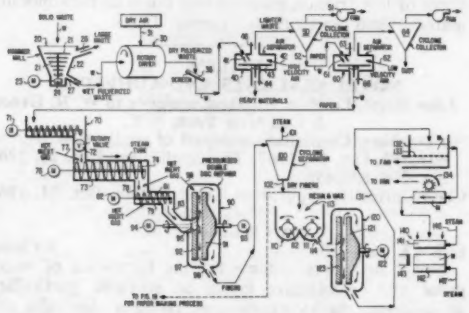
3,741,862
HIGHLY CRIMPED POLYNOSIC FIBERS
Masaicho Kubota, Taro Yamamura, Atsushi Kawai, and Takehiro Katsuyama, Ohtake, Masamichi Ikeda, Iwakuni, and Seiichi Omoto, Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Original application Sept. 22, 1967, Ser. No. 669,800, now Patent No. 3,574,812. Divided and this application Aug. 27, 1970, Ser. No. 67,591
Claims priority, application Japan, Sept. 22, 1966, 41/62,595; Oct. 12, 1966, 41/67,012
Int. Cl. D01d *5/22;* D01f *3/28;* D02g *3/00*
U.S. Cl. 161—173 2 Claims

A viscose having a γ-value of at least 50 is extended into a coagulation bath containing formaldehyde, and the resulting filaments are stretched in a second bath at 45° to 75° C. under a tension of up to 0.3 g./d. and then treated in a third bath containing alkali metal, alkaline earth metal and/or ammonium salts of sulfuric acid at a pH of 2.0 to 10.5 and a temperature of 30° to 70° C. The obtained highly crimped polynosic fibers have an asymmetric structure with a core-stainable layer positioned at the inside track of the crimp bend; the dye exhaustion is at least 40%, wet modulus is 0.5 to 1.8 g./d. and crimps are more than 10/25 mm.

ERRATUM

For Class 161—247 see:
Patent No. 3,741,803

3,741,863
METHOD OF RECYCLING WASTE CELLULOSIC MATERIALS
S. Hunter W. Brooks, Richmond, Va., assignor to The Rust Engineering Company, Pittsburgh, Pa.
Filed Aug. 27, 1971, Ser. No. 175,487
Int. Cl. D21b *1/08*
U.S. Cl. 162—4 20 Claims

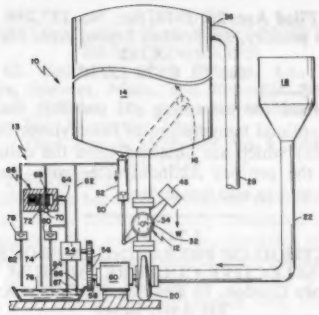


Method of providing cellulosic fibers and fiber bundles from sources of waste material, such as municipal and industrial waste products, for making medium density fiberboard and/or paper. The waste material is first pulverized or shredded into small pieces and then dried to remove excess moisture and to sterilize the material. The dried waste material is passed through one or more separators to remove the glass, metals, and other noncellulosic materials therefrom, leaving the cellulosic materials for further treatment. After further heating the cellulosic materials in the presence of a nonflammable medium, such as steam, to raise its temperature and further sterilize the material, the cellulosic pieces are abraded under a pressure and temperature sufficient to break down the hydrogen bonds and to soften any lignin and other resins present, in what is referred to as a dry-refining process. This frees the fibers and fiber bundles from one another, and provides relatively long, thin, soft fiber structures. The fibers and fiber bundles are then intimately mixed with a resin and formed into a mat, after which the mat is compressed under heat and pressure to form a fiberboard. Alternatively, to make paper, the fibers are dispersed in water, formed into a sheet, compressed, and then dried.

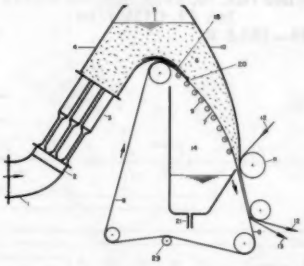
3,741,864
CONTINUOUS DIGESTER CHECK VALVE
Rohe Vester Pennington, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.
Continuation of application Ser. No. 202,775, Nov. 29, 1971, which is a continuation of application Ser. No. 836,214, June 12, 1969, which in turn is a continuation of application Ser. No. 576,277, Aug. 13, 1966, all now abandoned. This application May 10, 1972, Ser. No. 252,100
Int. Cl. D21c *7/06*
U.S. Cl. 162—246 1 Claim

The combination with a pressurized vessel for continuously digesting wood chips in a chemical solution with a pump for forcing the chips and solution into the vessel

and a valve which is biased to its closed position and a control for the valve which opens the valve when the pump is operating, the valve being closed when the pump is not operating.



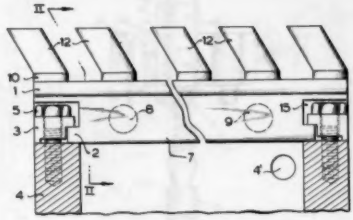
3,741,865
APPARATUS FOR MAKING A CONTINUOUS SHEET BY FILTRATION OF PARTICLES IN SUSPENSION IN A LIQUID
Pierre Lejeune, Grenoble, France, assignor to Creusot-Loire, Paris, France
Continuation-in-part of application Ser. No. 5,225, Jan. 23, 1970. This application Apr. 11, 1972, Ser. No. 242,934
Int. Cl. D21f *1/00*
U.S. Cl. 162—317 6 Claims



A continuous sheet is formed by filtration of particles in suspension in a liquid on a moving filter screen sloping downwardly in its direction of movement. The slope of the screen and the amount of space above the screen are selected to provide a progressive increase in the pressure acting on the filtrate to give a uniform filtrate extraction along the length of the screen.

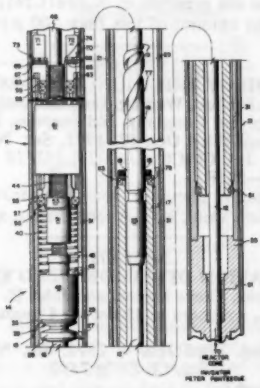
3,741,866
SUCTION BOX ARRANGEMENT FOR A PAPER MACHINE
Hans Jud, Esslingen, Sulzgries, Manfred Nussbaum, Plochingen, and Karl-Dieter Fuchs, Ebersfach, Fils, Germany, assignors to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung, Dusseldorf, Germany
Filed June 15, 1971, Ser. No. 153,384
Claims priority, application Germany, June 16, 1970, P 20 29 617.7
Int. Cl. D21f *1/48*
U.S. Cl. 162—374 10 Claims

The cover of a suction box consists of units juxtaposed over the width of the machine and individually fastened to the rigid base of the box. Each unit consists of a group of parallel rail sections spacedly juxtaposed in the direction in which the Fourdrinier wire or screen moves over



the cover and of one or more supporting elements secured to all the sections in the group and connecting the same into a unit.

3,741,867
CONTROL ROD DRIVE SYSTEM
Peter Fortescue, La Jolla, Calif., assignor to Gulf Oil Corporation, Pittsburgh, Pa.
Filed June 15, 1971, Ser. No. 153,182
Int. Cl. G21c *7/20*
U.S. Cl. 176—36 S 10 Claims

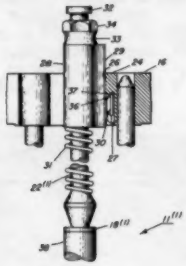


A control rod drive system for a nuclear reactor is described in which a flywheel is used to absorb kinetic energy of the control rod and associated elements near the end of a scram stroke. In this manner, braking of the control rod is accomplished without producing undue stress therein and in the associated elements.

3,741,868
FUEL BUNDLE WITH REMOVABLE RODS
Frank D. Qurnell, Robert N. Ikemoto, and James L. Lass, San Jose, Calif., assignors to General Electric Company
Filed Mar. 30, 1970, Ser. No. 23,723
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 26 Claims

A removable rod arrangement for the fuel bundle of a nuclear reactor core providing ready insertion and removal of the removable rods without disassembly of the

fuel bundle wherein the removable rods are accurately positioned by complementary positioning surfaces and re-



tained in position by a spring-loaded, tapered pin and pin seat.

3,741,869
PROCESS FOR THE PRODUCTION OF CITRIC ACID BY SUBMERGED FERMENTATION
Adel J. Kabil, Vienna, Austria, assignor to Aktiengesellschaft Jungbunzlauer Spiritus- und Chemische Fabrik, Schwarzenbergplatz, Austria
No Drawing. Filed May 24, 1971, Ser. No. 146,454
Claims priority, application Austria, June 1, 1970, 4,893/70
Int. Cl. C12d *1/04*
U.S. Cl. 195—36 R **3 Claims**

The invention relates to a process for the production of citric acid which comprises subjecting a partially decationized carbohydrate-containing solution to a submerged fermentation with a citric acid producing strain of *Aspergillus niger* in the presence of $K_4[Fe(CN)_6].3H_2O$ as an inhibitor in an amount of less than 500 p.p.m.

3,741,870
METHOD OF PREPARING $\Delta^{9(11)}$-ESTRONE
Gordon E. Mallett, Woking, England, assignor to Eli Lilly and Company, Indianapolis, Ind.
No Drawing. Filed Oct. 12, 1971, Ser. No. 188,547
Int. Cl. C07c *167/14, 167/18*
U.S. Cl. 195—51 F **1 Claim**

$\Delta^{9(11)}$-estrone is prepared from 19-hydroxy cholesterol by fermentation using a Corynebacterium species.

3,741,871
PREPARATION OF IMMOBILIZED ENZYMES
Lloyd E. Weeks, Creve Coeur, and John H. Reynolds, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Jan. 4, 1972. Ser. No. 215,426
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 **10 Claims**

An enzymatically-active, water insoluble composite comprises fibrous cellulose, a polyamine covalently attached to the cellulose by a carbamic linkage, and an active enzyme crosslinked to the polyamine by an alkylene diamidine linkage. The composite of this invention is useful as a packing for enzyme reactors.

3,741,872
PROCESS FOR PURIFYING ENZYMES OF THE ASPARAGINASE-TYPE
Lucien Penasse, Paris, Pierre Barthelemy, Clichy-sous-Bois, and Denise Hasbiss, Paris, France, assignors to Roussel-UCLAF, Paris, France
No Drawing. Filed Mar. 12, 1971, Ser. No. 123,870
Claims priority, application France, Mar. 23, 1970, 10,333
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 A **6 Claims**

Process for purifying enzyme of the asparaginase-type by precipitating the enzymes from aqueous solution by the addition of glycerol and ethyl alcohol.

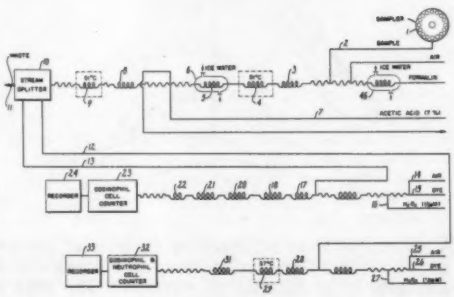
3,741,873
METHOD FOR THE STABILIZATION OF ALPHA-1,6-GLUCOSIDASES
Seinosuke Ueda, Fukuoka, and Koso Kato, Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan
Filed Apr. 26, 1971, Ser. No. 137,296
Claims priority, application Japan, Apr. 24, 1970, 45/35,182
Int. Cl. C12d *13/10*
U.S. Cl. 195—68 **4 Claims**

The method for increasing pH stability, thermal stability and optimal temperature of isoamylases (alpha-1,6-glucosidases) which are obtained from the cultivation of strains of the genuses Actinomycetes with the addition of calcium ions to said isoamylases.

3,741,874
METHOD OF PREPARING IMPROVED SELECTIVE CULTURE MEDIUM
Lenore Gordon, 10 Reading St., Ramat Aviv, Tel Aviv, Israel
No Drawing. Filed Jan. 20, 1972, Ser. No. 219,571
Int. Cl. C12k *1/10*
U.S. Cl. 195—102 **10 Claims**

An improved culture medium which is selective for the growth, isolation and identification of *Hemophelius influenzae* bacteria is prepared by combining conventional culture medium ingredients with red blood cells under temperature conditions which release but do not destroy the X and V factors present in the blood cells, thereby making them available as nutrients in the culture medium.

3,741,875
PROCESS AND APPARATUS FOR OBTAINING A DIFFERENTIAL WHITE BLOOD CELL COUNT
Hudson R. Ansley, Warwick, and Leonard Ornstein, White Plains, N.Y., assignors to Mount Sinai Research Foundation, Inc., New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,333
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R **31 Claims**



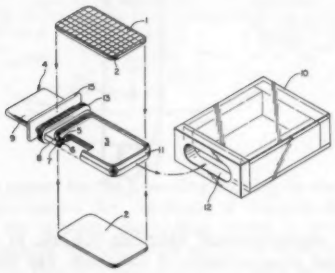
A process and apparatus for obtaining a differential white blood cell count is disclosed. A cytological fixing agent is added to a sample of body fluid, such as blood, containing white blood cells to kill the blood cells contained in the solution and to immobilize the catalytic enzymes in the cells. The activity of the enzymes is not seriously impaired, and soluble components in the extracellular solution are not precipitated. When the body fluid also contains red blood cells a hemolyzing reagent is added after the fixation step to cause the red blood cells to release their hemoglobin content into solution. Addition of a specific cytochemical substrate, chromogenic precipitating coupling reagent, and pH buffer causes deposition of an insoluble dye in a specific type of cell containing the immobilized enzyme. The solution containing the dyed blood cells is then passed through a photometric counter which rapidly and accurately gives

a count of the dyed cells. Using different specific substrates for different enzymes contained in specific kinds of cells, absolute and relative counts of the different cells can be obtained.

3,741,876
METHOD OF MEASURING ENZYME REACTION RATES
George G. Guilbault, New Orleans, La., Robert G. Sanders, Spencer, Mass., and Robert L. Zimmerman, Jr., New Orleans, La., assignors to Mason Research Institute Inc., Worcester, Mass.
Filed Aug. 6, 1970, Ser. No. 61,584
Int. Cl. C12k 1/04
U.S. Cl. 195—103.5 R 29 Claims

A reaction rate between an enzyme reactant and a substrate reactant is fluorometrically measured by forming a solid reactant film of one of the reactants on a silicone matrix pad. The reactant film is then contacted with a solution of the other reactant to produce a fluorescent material. The change of fluorescence with time is measured by placing the pad in a fluorometer and this rate of change is compared against a calibration curve to determine the concentration of the reactant in the reactant solution.

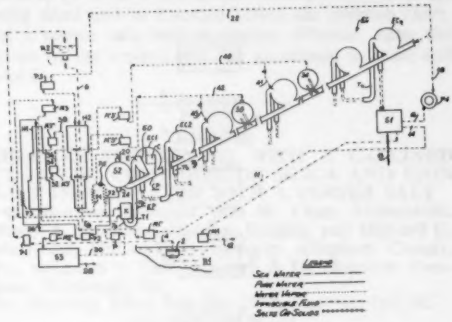
3,741,877
METHOD AND APPARATUS FOR COLLECTING AND GROWING MICRO-ORGANISMS
Charles P. Shaufus, Waltham, Robert E. Rose, Chelmsford, and Donald B. Rising, Stow, Mass., assignors to Millipore Corporation, Bedford, Mass.
Filed May 22, 1970, Ser. No. 39,759
Int. Cl. C12k 1/00
U.S. Cl. 195—127 6 Claims



A construction for collecting and growing micro-organisms obtained from an aqueous solution comprising a filter sealed to one surface of an absorbent pad containing a nutrient for the micro-organisms. The micro-organisms in aqueous solution are filtered through the filter under the capillary action of the pad. The micro-organisms are deposited on the filter and the aqueous solution passed into the pad provides a vehicle for contacting the nutrient and organisms.

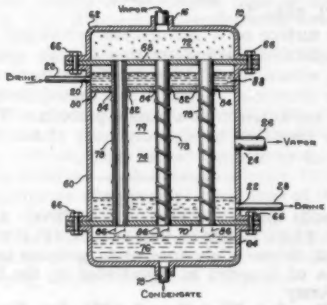
3,741,878
PROCESS AND SYSTEM FOR EXTRACTING SALTS, CONCENTRATED BRINE, AND/OR PURE WATER FROM SALINE WATER
Asriel Osdor, Tel-Aviv-Israel, assignor to Hydro Chemical & Mineral Corp., New York, N.Y.
Continuation of abandoned application Ser. No. 831,087, June 6, 1969. This application May 30, 1972, Ser. No. 258,110
Int. Cl. B01d 1/00, 1/26, 1/28, 3/00, 3/02, 3/34, 7/00
U.S. Cl. 202—173 21 Claims

A process for extracting salts, concentrated brine, or pure water from saline water by distillation is characterized by replacing a part of the saline water before distillation with a quantity of an oil, distilling pure water from the mixture through one or more cycles until the saline water reaches a concentration where a substantial



quantity or most of the salt precipitates and separating from the mixture the precipitated salt, concentrated brine, and the oil.

3,741,879
APPARATUS FOR DISTILLATION OF FLUIDS
Theodore R. Best, Jr., 18 Kennedy Terrace, Westwood, N.J. 07675
Continuation-in-part of abandoned application Ser. No. 131,994, Apr. 7, 1971. This application May 30, 1972, Ser. No. 257,906
Int. Cl. B01d 1/00, 1/22, 3/00, 3/08, 3/28
U.S. Cl. 202—236 13 Claims

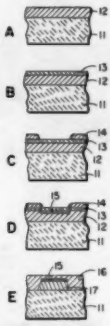


Fluids are subjected to distillation by causing vapors to pass vertically through tubular conduits while a cooler liquid film flows over the outside of the conduits. The vapors condense and give up heat to the liquid film causing a portion of it to vaporize. The tubular conduits are contained in a bundle within a shell in which the vapors thus generated are collected. A vapor outlet is mounted in the shell to permit emission of the vapors. A perimetric space surrounding the tube bundle serves to facilitate the emission of the vapors from the shell.

3,741,880
METHOD OF FORMING ELECTRICAL CONNECTIONS IN A SEMICONDUCTOR INTEGRATED CIRCUIT
Hiroshi Shiba and Hideo Tsunemitsu, Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan
Filed Oct. 22, 1970, Ser. No. 83,140
Claims priority, application Japan, Oct. 25, 1969, 44/85,358; Oct. 30, 1969, 44/87,072
Int. Cl. C23b 5/46, 5/48
U.S. Cl. 204—15 18 Claims

A method of forming electrical connections in a semiconductor integrated circuit device in which an anodiz-

able metallic material such as aluminum is formed on a substrate. Anodic oxidation is then performed to form a thin porous oxide film of the metallic material. The surface of the porous oxide film is then selectively covered



with a photoresist. The exposed surface of the metallic material is then anodized to form a non-porous metallic oxide film, which thereafter serves as a mask during the formation of the wiring channel.

3,741,881

SURFACE TREATMENT OF POLYURETHANE FOR PLATING

Ismat A. Abu-Isa, Birmingham, and Roger J. Eldred, Detroit, Mich., assignors to General Motors Corporation, Detroit, Mich.

No Drawing. Filed Sept. 15, 1971, Ser. No. 180,903

Int. Cl. C23b *5/64*

U.S. Cl. 204—30 **3 Claims**

The surface of a polyurethane elastomer is rendered electroplatable by first treating it with one of certain specific ultraviolet radiation sensitizers, then exposing it to intense ultraviolet radiation and subsequently subjecting it to a known electroless plating procedure. The resulting surface may then be electrolytically plated with copper, nickel, silver or other desired metal.

3,741,882

METHOD OF ELECTRODEPOSITING A LUSTERLESS, ELECTRICALLY CONDUCTIVE COATING

Glenn R. Schaer, Columbus, Ohio, assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Dec. 7, 1971, Ser. No. 205,732

Int. Cl. C23b *5/50*

U.S. Cl. 204—42 **4 Claims**

A nickel electroplating solution is used for electrodepositing a lusterless, abrasion, resistant, and electrically conductive coating on a metal body. The nickel electroplating solution contains activated carbon and the nickel coating may be deposited on an initial electroplated nickel layer not containing carbon.

3,741,883

DEVICE FOR MEASURING AN ACTIVITY OF CADMIUM IONS

Kenji Higashiyama and Hiroshi Hirata, Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

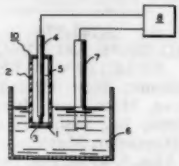
Filed Feb. 28, 1972, Ser. No. 229,813

Claims priority, application Japan, Mar. 2, 1971, 46/11,124, 46/11,125; Mar. 3, 1971, 46/11,408, 46/11,409

Int. Cl. G01n *27/30*

U.S. Cl. 204—195 M **6 Claims**

A device for measuring an activity of cadmium ions comprises a selective electrode and a reference electrode immersed in a solution containing cadmium ions, said selective electrode including a disc in a batch composition which comprises a combination of cadmium chalcogenide and at least one member selected from the group consisting of silver telluride and silver selenide or a combination



of silver sulfide and at least one member selected from the group consisting of cadmium telluride and cadmium selenide.

3,741,884

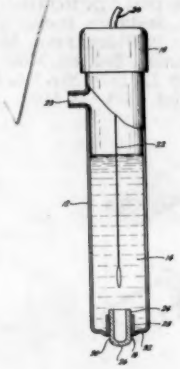
ELECTROCHEMICAL ELECTRODE LIQUID JUNCTION STRUCTURE AND METHOD FOR PRODUCING SAME

Maurice L. Deushane, La Habra, and David A. Rohrer, Whittier, Calif., assignors to Beckman Instruments, Inc.

Filed May 4, 1972, Ser. No. 250,279

Int. Cl. G01n *27/30, 27/36*

U.S. Cl. 204—195 F **9 Claims**



An electrochemical electrode for use in making ion potential measurements of solutions. The electrode embodies a liquid junction structure which is formed by coating the outer surface of a first glass tube with a material containing either a ceramic or an admixture of particles of glass and inert particles. The coated tube is mounted within an opening in a second glass tube and heat is applied to the two tubes in the region of the coating until the coating partially fuses and adheres by fusion to the first tube and the second tube is fused to the coating. The partially fused coating provides an annular porous liquid junction structure through which salt bridge solution may flow to contact a sample.

3,741,885

ELECTRIC CONDUCTOR FOR USE IN METALLIC SALT ELECTROLYTIC CELL

Kenji Sasaki, Takehara, Japan, assignor to Mitsui Mining & Smelting Co., Ltd., Chuo-ku, Tokyo, Japan

Filed May 4, 1971, Ser. No. 140,147

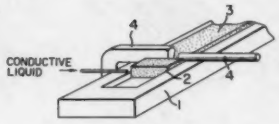
Claims priority, application Japan, May 7, 1970, 45/38,232

Int. Cl. C23b *5/68*

U.S. Cl. 204—288 **2 Claims**

An electric conductor to serve for a metallic salt electrolytic cell which is characterized by the provision of: the liquid-containing portion prepared by engraving a groove or hollow on the surface of the conductor; a

liquid-impregnatable spongy substance inserted in said liquid-containing portion in such a fashion as bringing said spongy substance into contact with the electrode or electrode beam to be mounted on the liquid-containing portion on the occasion of electrolysis operation; and a conductive liquid put in the liquid-containing portion to see that the portion of the spongy substance in contact with the electrode or electrode beam be maintained in wet condition during electrolysis by virtue of the conductive liquid impregnated in the spongy substance.

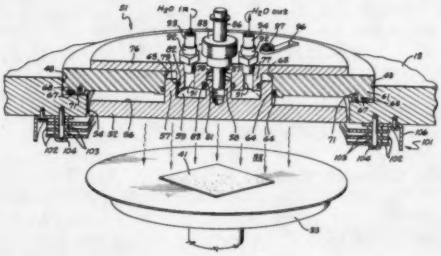


3,741,886

SPUTTERING SYSTEM AND TARGET ELECTRODE CONSTRUCTION FOR USE THEREWITH

Karel Urbanek, Atherton, and Edson G. Kerswill, Mountain View, Calif., assignors to Randex, Inc., Palo Alto, Calif.

Filed June 28, 1971, Ser. No. 157,419
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **16 Claims**



Sputtering system having a housing forming an enclosed chamber with means for supplying a vacuum to the chamber in the housing. Supporting means is provided within the chamber for supporting an article to be coated. The housing is provided with a support plate having an opening therein which is generally opposite the support means. A target electrode is disposed in the opening and faces the support means. An insulating member is secured to the target electrode and to the support plate to support the target electrode so that it is spaced from the side wall of the support plate forming the opening and has its innermost surface generally flush with the innermost surface of the support plate and so that the space between the edge of the target electrode and the wall of the support plate defining the opening is less than one Debye length. Means is provided for supplying a voltage to the target electrode.

3,741,887

OXIDATIVE SWEETENING WITH A CALCINED COMPOSITE OF AN ALKALI METAL SILICATE, AN IRON SALT AND A COPPER SALT

Sun W. Chun, Murrysville, Harry A. Hamilton, Natrona Heights, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed July 15, 1971, Ser. No. 165,792
Int. Cl. C10g *27/04*
U.S. Cl. 208—191 **9 Claims**

A copper-iron group metal catalyst useful in the conversion of thiols to disulfides is prepared by forming an aqueous solution of sodium or potassium silicate; and a soluble iron group metal salt, such as ferric chloride, and cogelling the solution with a basic agent, such as ammonia, to form a precipitate. This precipitate is optionally dried and/or calcined before the addition thereto of a copper salt, such as copper chloride. After the addition of the copper salt, the composite is dried and calcined.

3,741,888

OXIDATIVE SWEETENING WITH A CALCINED COGELLED COMPOSITE OF SILICA AND IRON SALT IMPREGNATED WITH A COPPER SALT

Harold Beuther, Gibsonia, Sun W. Chun, Murrysville, Harry A. Hamilton, Natrona Heights, and Howard G. McIlvried, McCandless Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed July 15, 1971, Ser. No. 165,785
Int. Cl. C10g *27/04*
U.S. Cl. 208—191 **10 Claims**

Method of preparing a catalyst useful in the conversation of compounds containing a sulfhydril group (thiols) to disulfides, i.e. the so-called sweetening reaction. The catalyst comprises an inorganic amorphous polymer of silicon, oxygen and an iron group metal impregnated with a copper salt.

3,741,889

OXIDATIVE SWEETENING OF HYDROCARBONS WITH A CALCINED COPPER-CONTAINING PRECIPITATE OF SILICA SOL AND IRON SALT

Sun W. Chun, Murrysville, Harry A. Hamilton, Natrona Heights, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed July 15, 1971, Ser. No. 163,042
Int. Cl. C10g *27/04*
U.S. Cl. 208—191 **5 Claims**

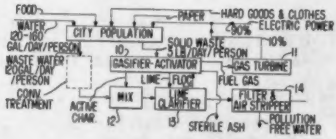
A copper-iron group metal catalyst useful for the conversion of thiols to disulfides is prepared by forming a solution of a substantially alkali metal-free silica sol and an iron group metal salt, such as ferric chloride, forming a gelatinous precipitate wherein the atomic ratio of the iron group metal to silicon to oxygen is from 1:2:5.5 to 1:12:25.5 and dispersing in said gelatinous precipitate an aqueous solution of a copper salt, such as $CuCl_2$, and thereafter drying and calcining said composite.

3,741,890

SOLID WASTE DISPOSAL AND WATER PURIFICATION METHOD AND APPARATUS

Richard D. Smith, Palo Alto, and Dale A. Furlong, Sunnyvale, Calif., assignors to Combustion Power Company, Inc., Palo Alto, Calif.

Filed Aug. 6, 1969, Ser. No. 847,994
Int. Cl. C02b *1/14;* **C02c** *5/02*
U.S. Cl. 210—40 **13 Claims**



A solid waste disposal and water purification system is described with a waste receiving, shredding, and drying

assembly, a gas turbine assembly for combusting hot fuel gases, and a gasifier assembly for pyrolyzing the waste and producing hot fuel gas and active char. The active char is removed from the gasifier assembly and is mixed with incoming polluted water for purification. The contaminated char is removed from the water which is then lime clarified, filtered and, if desired, sterilized and distilled. The contaminated char is reactivated for reuse in water purification or consumed in the gasifier assembly.

3,741,891

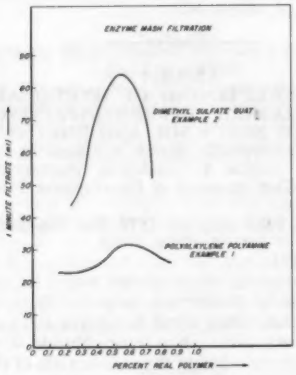
POLYQUATERNARY FLOCCULANTS AND PROCESSES OF PREPARING THEM BY QUATERNIZING ALKYLENE POLYAMINE RESIN POLYMERS FROM EPIHALOHYDRIN AND MONOALKYLAMINES

Hans Peter Panzer and Robert Rabinowitz, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Original application Feb. 16, 1971, Ser. No. 115,557. Divided and this application Feb. 19, 1971, Ser. No. 117,032

Int. Cl. C02b *1/20*

U.S. Cl. 210—54 8 Claims



The cationic flocculant obtained by reacting a monoalkylamine, such as monomethylamine, with an epihalohydrin, such as epichlorohydrin, is quaternized with quaternizing agents, such as dimethyl sulfate, methyl chloride, ethylene oxide, and the like, producing a polyquaternary polymer. The polymer shows improved flocculating power in flocculating aqueous dispersions, such as raw river water, digestion liquors from ilmenite and sulfuric acid, enzyme mashes, sewage flocculation, sewage sludge dewatering, and the like. The polymers are also useful in systems which contain chlorine, such as chlorinated river water, as the quaternary groups are substantially nonreactive with chlorine.

3,741,892

DEVICE FOR FILTERING A PARTICLE-LADEN FLUID

Lucien R. Bourdale, 30 Avenue Aristide Briand, Arpajon, France

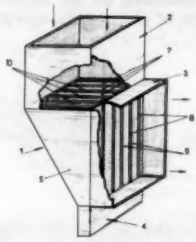
Filed Nov. 22, 1971, Ser. No. 200,845

Claims priority, application France, Nov. 23, 1970, 7041907

Int. Cl. B01d *29/24*

U.S. Cl. 210—65 2 Claims

A method of filtering a liquid or gaseous particle-laden fluid, in which method upstream and downstream paths of travel are imparted to the fluid on either side of a filtering surface through which at least part of the fluid is thus caused to pass, said surface being located between an inlet for the laden



fluid and an outlet for the purified fluid. The invention also relates to a device for performing this method.

3,741,893

FLAME RETARDANT COMPRISING SUPPORTED ANTIMONY TETROXIDE

Rocco L. Mascioli, Media, and Robert G. Petrella, Glenolden, Pa., assignors to Air Products and Chemicals, Inc., Wayne, Pa.

No Drawing. Filed Oct. 8, 1971, Ser. No. 187,847

Int. Cl. C09k *3/28*

U.S. Cl. 252—8.1 2 Claims

A finely divided inorganic oxide carrier powder is impregnated with pure antimony trichloride, and thereafter subjected to hydrolysis in an aqueous system to provide antimony oxide on the carrier particle. Such powder is calcined at 400–1000° C. to provide a supported cervantite. Synthetic resins, both cellular and noncellular, can be made more flame retardant using the supported cervantite in combination with an organic halide. There is a synergistic effect of greater fire retardancy than would result from the additive effects of the inorganic powder and oxide of antimony. Plastic articles containing supported cervantite have an oxygen index of at least 25. Cervantite is the mineral designation for antimony tetroxide of Sb_2O_4.

3,741,894

CHEMICALLY MODIFIED ORGANIC POLYMERS

Stanley J. Storfer, Elizabeth, N.J., assignor to Esso Production Research Company

Original application June 15, 1967, Ser. No. 646,246, now Patent No. 3,555,006. Divided and this application June 8, 1970, Ser. No. 51,412

Int. Cl. C10m *3/48*; B01j *13/00*

U.S. Cl. 252—8.5 C 7 Claims

Long chain water-soluble organic polymers having hydroxyl groups located at β positions with respect to one another are reacted with α-keto carboxylic acids under aqueous conditions to form modified polymers useful in the preparation of oilfield drilling fluids and similar compositions.

3,741,895

COMPOSITION AND METHOD FOR IMPROVING FLUIDS FOR SECONDARY OIL RECOVERY

Willis G. Routson and Michael Neale, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,539

Int. Cl. E21b *47/20*; G01n *31/22*

U.S. Cl. 252—8.55 D 4 Claims

When it is desired to maintain an excess of hydrosulfite ions to provide a reductive environment in an aqueous medium employed for waterflooding in secondary oil recovery, the incorporation of a small amount of a reductive index agent, such as methylene blue, in said medium provides a method for determining when the hydrosulfite ions have been depleted as by absorption of

oxygen. A preferred composition includes a mobility control agent such as hydrolyzed polyacrylamide in the medium.

3,741,896

BASIC ALKYLENE AMINE AND SULFUR BRIDGED ALKYLPHENOXIDES FOR USE IN LUBRICATING OILS

Andrew Doyle Abbott, Greenbrae, and Thomas V. Liston, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 97,300, Dec. 11, 1970. This application Oct. 4, 1971, Ser. No. 186,494

Int. Cl. C10m *1/34, 1/38*

U.S. Cl. 252—42.7 **7 Claims**

Novel dispersant detergents are provided by combining, at an elevated temperature, a sulfurized alkylphenol and a Mannich base—prepared from formaldehyde, alkylphenol, and a lower alkyl monoamine—in the presence of an alkaline earth metal base and a liquid hydroxylic compound, so as to prepare the alkaline earth metal salt of a chemically combined sulfurized alkylphenol and Mannich base. The compositions which are detergent dispersants also provide antioxidant activity and alkalinity reserve.

3,741,897

EXTREME PRESSURE LUBRICATION THROUGH ADDITIVES

Josef Gansheimer, Munich-Obermenzing, and Oswald Schanzer, Munich, Germany, assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Original application Jan. 2, 1970, Ser. No. 438, now Patent No. 3,677,946. Divided and this application Jan. 12, 1972, Ser. No. 217,402

Int. Cl. C10m *1/32*

U.S. Cl. 252—25 **1 Claim**

Water insoluble organic compounds which liberate gaseous nitrogen at high temperatures and have at least one N—N single or double bond in each molecule are added to lubricants to improve lubricity and decrease corrosion while remaining readily removable from the surfaces to which they have been applied.

3,741,898

FOAMED PRODUCT FROM SODIUM SILICATE AND PROCESS OF MANUFACTURE THEREOF

William A. Mallow, Richard A. Owen, and Ethelbert J. Baker, Jr., San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Continuation-in-part of applications Ser. No. 868,113, Oct. 21, 1969, and Ser. No. 102,504, Dec. 29, 1970. This application July 9, 1971, Ser. No. 161,218

Int. Cl. E04b *1/74*

U.S. Cl. 252—62 **19 Claims**

A solidified foamed material is made by frothing a mixture of an aqueous solution of sodium silicate, a surface tension depressant and a silicon dioxide polymer forming agent with or without the inclusion of an alkali metal silicate gelling agent. In one form, the product is free of any substantial amount of filler. In another form, a filler is required.

3,741,899

PIEZOELECTRIC CERAMICS

Akio Koyano, Mishima, Japan, assignor to Sumitomo Special Metal Company Limited, Osaka, Japan

Continuation-in-part of abandoned application Ser. No. 713,081, Mar. 14, 1968. This application Dec. 16, 1970, Ser. No. 98,650

Claims priority, application Japan, Mar. 16, 1967, 42/16,516; Aug. 25, 1967, 42/54,660; Nov. 2, 1967, 42/70,734

Int. Cl. C04b *35/46, 35/48*

U.S. Cl. 252—62.9 **6 Claims**

A ceramic having excellent piezoelectric and dielectric characteristics obtained from a composition of

$$Pb\{(Zn_{1/3}Nb_{2/3})_xTi_yZr_z\}O_3$$

wherein $X+Y+Z=1$. The piezoelectric ceramic has a high curie point, improved piezoelectric characteristics as compared with the conventional $BaTiO_3$ ceramics, has good insulation resistance, and is easy to sinter as compared with $Pb(ZrTi)O_3$ ceramics, thereby being very useful in the industry. The radial coupling constant of the ceramic can be increased by including an additive of at least one member selected from the group consisting of Na_2CO_3, Cu_2O, Ag_2O, MgO, NiO, Fe_2O, In_2O_3, SnO_2, Cr_2O_3 and Co_2O_3 in a total quantity up to 5 mol percent of the composition or at least one member selected from the group consisting of $CaCO_3$, $SrCO_3$, and $BaCO_3$ in a total quantity up to 10 mol percent of the composition.

3,741,900

CLEANING COMPOSITION

Justin J. Murtaugh, Guilford, Ind., and Robert C. Brown, Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

No Drawing. Filed July 15, 1970, Ser. No. 55,285

Int. Cl. C11d *3/04*

U.S. Cl. 252—89 **16 Claims**

A drain cleaning composition and the method for preparation, containing anhydrous magnesium chloride in combination with other inorganic salts such as but not limited to calcium chloride, sodium chloride and potassium chloride. The method involves fusing the ingredients, granulating and pelletizing or compacting.

3,741,901

WASHING COMPOSITIONS AND PROCESS

Jack Ziffer, Milwaukee, Wis., assignor to Pabst Brewing Company, Milwaukee, Wis.

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,130

Int. Cl. C11d *3/02*

U.S. Cl. 252—89 **9 Claims**

Water soluble sulfites and bisulfites are used to increase washing effectiveness of detergent compositions, especially those containing bacterial protease and/or bacterial amylase, and to give a buffered pH level, particularly where other components give too high a pH which would normally affect the stability of said enzymes.

3,741,902

LAUNDRY PRESPOTTER COMPOSITION

John H. Barrett, Jr., Norwalk, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

No Drawing. Filed May 24, 1971, Ser. No. 146,547

Int. Cl. C11d *7/42*

U.S. Cl. 252—90 **9 Claims**

Laundry prespotter free of water and applicable to dampened fabrics without gelling consisting essentially of a liquid nonionic detergent, an organic liquid miscible therewith selected from certain alcohols, alkylene glycols, alkylene glycol alkyl or phenyl ethers, alkylene glycol esters, alkoxy ethanols and propanols and alkoxy triglycols, and optionally, an enzyme ingredient comprising alkaline or neutral protease or amylase; the prespotter can be packaged in an aerosol container for user convenience.

3,741,903

DETERGENT COMPOSITIONS

John Mon Evans, Lower Bebington, England, assignor to Lever Brother Company, New York, N.Y.

Continuation-in-part of Ser. No. 882,305, Dec. 4, 1969, abandoned. This application Dec. 8, 1971, Ser. No. 206,143

Claims priority, application Great Britain, Dec. 12, 1968, 59,272/68

Int. Cl. C11d *7/52*

U.S. Cl. 252—95 **9 Claims**

A detergent composition of the low temperature bleaching type comprises an inorganic persalt, for example sodium perborate, an inorganic peracid precursor, for example

N,N,N',N-tetraacetyl ethylene diamine, a cotton substantive fluorescent agent of the 4,4'-di(sym-triazinylamino)-stilbene-2,2'-disulphonate type and not more than 0.001 per cent of a triazine derivative of specified formula. The compositions have a decreased tendency to discolor and form malodors during storage.

3,741,904

PROCESS FOR PREPARATION OF A PROTECTED GRANULE AND DISHWASHING COMPOSITION FORMED THEREWITH

Richard Hans Christensen, Western Springs, Earl Edward Combs, Crestwood, and Mario Albert Petrone, Oak Park, Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed May 5, 1971, Ser. No. 140,606
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 **5 Claims**

A protected granule is prepared by adding to a builder salt an aqueous solution of a nonionic surfactant and subsequently adding a liquid sodium silicate having an SiO_2/Na_2O ratio between 2.4 and 2.5 inclusive and a viscosity at 68° F. of between about 1700 and 2200 centipoises inclusive. This protected granule may be combined with a chlorine releasing agent to form an improved dishwashing composition.

ERRATUM

For Class 252—107 see:
Patent No. 3,741,952

3,741,905

PREPARATION OF THROUGH HOLE PRINTED CIRCUIT BOARDS, AND COMPOSITIONS USEFUL THEREFOR

Edward B. Saubestre and Lawrence J. Durney, Hamden, Conn., assignors to Enthone, Incorporated, New Haven, Conn.

No Drawing. Filed Sept. 28, 1967, Ser. No. 671,243
Int. Cl. C11d *7/08;* C23g *1/02*
U.S. Cl. 252—142 **12 Claims**

This invention concerns an improvement in the process for rendering electrically conductive the non-conductive walls of the holes in the insulating boards or base in the preparation of through hole printed circuit boards, whereby the formation of a weakly adherent copper layer on the copper-clad surface portions of the board is inhibited with attendant elimination of the prior requirement of a sanding removal of the weakly adherent electroless copper prior to the electroplating. The improvement is provided by having present in an acidic liquid solution utilized to treat the board including the walls of the through holes prior to the activating and electroless copper plating, an effective amount of a lower alkyl thiourea. The acidic liquid solution containing the alkyl thiourea can be, for example, an acidic neutralizing solution utilized to neutralize alkaline material (derived from an alkaline cleaner) present on the board surface, or an acidic sensitizer solution for sensitizing the board surfaces for the activating step.

3,741,906

HINDERED PHENOXY RADICALS

William H. Starnes, Jr., Austin, Tex., assignor to Esso Research and Engineering Company

No Drawing. Filed Dec. 17, 1971, Ser. No. 209,447
Int. Cl. C09k *3/00*
U.S. Cl. 252—182 **7 Claims**

Hindered phenoxy radicals are generated by dissolving 3,3',5,5' - tetra-t-butyl-1,1'-dichloro[bi-2,5-cyclohexadien-1-yl]4,4'-dione in a suitable solvent such as benzene. The so generated radicals may be reacted with a reactive substrate such as 2,6-di-t-butyl-4-benzylphenol.

3,741,907

FLUORESCENT PIGMENTS HAVING AN ISOCYANATE RESIN BASE

Hans-Peter Beyerlin, Stuttgart-Weilimdorf, Germany, assignor to G. Giegle & Co. GmbH, Stuttgart, Germany

No Drawing. Filed Mar. 16, 1971, Ser. No. 124,963
Claims priority, application Germany, Mar. 20, 1970, P 20 13 393.1; Dec. 28, 1970, P 20 63 948.9
Int. Cl. C09k *1/00, 1/02*
U.S. Cl. 252—301.2 R **5 Claims**

Brittle resins suitable as bases for fluorescent pigments are prepared from diisocyanates by polyaddition reactions with sulfonamides and/or polyols. The coloring matter may be dispersed in the polymerization mixture or the comminuted resins may be dyed in an acid dye bath. The resins are readily pulverized, resist elevated temperatures without softening or decomposing, and are insoluble or practically insoluble in the solvents usually employed in making organic coating compositions and inks.

3,741,908

DEPURATIVE PROCESS AND COMPOSITION

James Howard Dailey, Detroit, Mich., assignor to Chemetron Corporation, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 853,976, Aug. 28, 1969. This application Mar. 4, 1970, Ser. No. 16,584
Int. Cl. B01d *17/04*
U.S. Cl. 252—330 **12 Claims**

This invention relates to a method for resolving oil-water mixtures and emulsions into separate phases and includes a composition comprising a critical proportion of iron and calcium salts, the calcium to iron ratio being from about 1.5:1 to about 5:1.

3,741,909

ANTIOXIDANT COMPOSITION TO STABILIZE ORGANIC MATERIALS

Izumi Yamane, Yokohama, Masuzo Nagayama, Tokyo, and Makoto Takai, Chiba, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

No Drawing. Filed May 4, 1971, Ser. No. 140,301
Claims priority, application Japan, May 9, 1970, 45/39,526
Int. Cl. C08f *45/58*
U.S. Cl. 252—401 **6 Claims**

A stable organic material composition prepared by mixing a compound expressed by the general formula:

$$\left(R-S-X-\overset{O}{\overset{\|}{C}}-O\right)_n M$$

(wherein R represents hydrocarbon radical having 6–22 carbon atoms, X represents a lower alkylene radical having 1–5 carbon atoms, M represents non-alkali metal and *n* represents an integer ranging from 1 to 5), along with a phenol-type antioxidant or amine-type antioxidant, with such an organic material as synthetic resin, rubberlike substance, various oils, etc.

3,741,910

CATALYST FOR THE PRODUCTION OF ACRYLONITRILE

Tatsuo Shiraishi, Susumu Kishiwada, Shinkichi Shimizu, Shigeru Honmaru, Hiroshi Ichihashi, and Yoshikiko Nagaoka, Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-shi, Japan

No Drawing. Filed May 28, 1971, Ser. No. 148,166
Claims priority, application Japan, Sept. 11, 1970, 45/80,175
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **5 Claims**

In the production of acrylonitrile by a vapor phase reaction of propylene, ammonia and oxygen at an elevated temperature, a process which comprises contacting propylene, ammonia and oxygen with a catalyst composition comprising a catalyst system of the formula:

$$Tl_aP_bMo_cFe_dBi_eMn_fX_gO_h$$

wherein X represents one or more of the metals, Ni, Mg and Co and *a, b, c, d, e, f, g* and *h* represent, respectively, the relative number of atoms of each component; provided that, when *c* is 12, *a* is 2 or less, but not 0, *b* is 0 5; *e* is 0.1 to 5; *f* is not more than 15 but not 0; g is 0 to 15; *f*+*g* is 2 to 15; and *h* is decided or determined depending on the number of the other atoms and is usually from 38.3 to 81.5.

3,741,911

PHOSPHATE-FREE DETERGENT COMPOSITION

Hugh J. S. Shane, Guelph, Ontario, Canada, assignor to Hart Chemical Limited, Guelph, Ontario, Canada

No Drawing. Continuation-in-part of abandoned application Ser. No. 58,202, July 24, 1970. This application Dec. 21, 1970, Ser. No. 100,356

Int. Cl. C11d *1/06, 1/83, 3/10*

U.S. Cl. 252—527 **4 Claims**

A detergent composition, preferably phosphate-free, is built using conventional builders, optionally including an organic sequestering agent, and contains as the active system a coacervate system containing an alkyl or alkylaryl polyoxyalkylene carboxylic acid and a non-ionic detergent. The coacervate system is suitable for washing fabrics and for use in automatic dish washing machines.

3,741,912

LOW FOAMING DETERGENT

Thomas M. Kaneko, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 786,350, Dec. 23, 1968. This application Nov. 19, 1971, Ser. No. 200,610

Int. Cl. B01d *19/04;* **C011d** *1/66, 1/34*

U.S. Cl. 252—529 **5 Claims**

A composition adapted to be formulated with automatic dishwashing detergents for reducing foam during use thereof in the presence of proteinaceous matter, comprising:

(A) about 95.0 to 99.5 weight percent of a nonionic surface active agent and

(B) about 0.5 to 5.0 weight percent of

(a) alkyl phosphate ester having 18 carbon atoms in the alkyl radical plus

(b) oxyethylated amines selected from the group consisting of an oxyethylated mono or di alkyl amine or a mono or di (hydroxy alkyl) amine wherein the alkyl group contains about 10 to 20 carbon atoms and the oxyethylene portion contains 1 to 50 units,

the weight ratio of said alkyl phosphate ester (a) to said oxyethylated fatty amine (b) being from about 2:1 to 1:2.

3,741,913

PROCESS FOR PREPARING SPRAY DRIED DETERGENT COMPOSITIONS

Ake Waag, Stenungsund, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

No Drawing. Continuation of abandoned application Ser. No. 648,248, June 23, 1967. This application Feb. 19, 1971, Ser. No. 117,073

Claims priority, application Sweden, June 23, 1966, 8,678/66

Int. Cl. C11d *3/36*

U.S. Cl. 252—544 **14 Claims**

A process is provided for preparing spray dried substantially homogeneous detergent compositions from aqueous slurries containing surface-active ethylene oxide adducts wherein prior to spray drying the aqueous slurry, an organic mono- or polyphosphate ester is incorporated with the surface-active ethylene oxide adduct and other ingredients employed in the detergent composition, in order to inhibit the slurry from separating into different layers so that the particulate detergent composition produced will be substantially homogeneous and low foaming and have good cleaning power. The phosphate ester may be added to the ingredients of the detergent composition prior to, during or subsequent to the preparation of the aqueous slurry of the ingredients.

Detergent compositions are also provided, which can be prepared employing the above process, consisting essentially of at least one surface-active ethylene oxide adduct, and an organic mono- or polyphosphate ester, and optionally, inorganic builders, optical whiteners, chelating agents and dirt carriers, such as carboxymethyl cellulose.

3,741,914

CLEANING POLISHING COMPOSITION

Lawrence R. Parks, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 26, 1969, Ser. No. 836,935

Int. Cl. C11d *1/50, 1/12*

U.S. Cl. 252—545 **8 Claims**

Cleaning and polishing compositions dryable to a bright surface without requiring buffing, comprising: a continuous aqueous phase; a dispersed, non-volatile, water-insoluble, solid film-forming polymer capable of being deposited in a smooth, bright, protective film upon evaporation of the aqueous phase and having a molecular weight of from about 5 million to about 15 million; a plasticizer for said polymer; a cleaning agent; and sufficient base to adjust the pH of the formulation to from about 8 to about 12.

3,741,915

SULFONATE DETERGENTS

Stanley C. Paviak, Shaler Township, Allegheny County, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 14, 1971, Ser. No. 143,363

Int. Cl. C11d *1/14*

U.S. Cl. 252—555 **4 Claims**

An aqueous composition of matter containing sodium alkene sulfonates or sodium hydroxy alkane sulfonates and an alkali metal sulfate in an amount sufficient to increase the viscosity thereof.

3,741,916

METHOD FOR POLYMERIZATION OF EPOXIDES

Harumi Asai and Ryuichiro Yoda, Tokyo, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

No Drawing. Filed Dec. 20, 1965, Ser. No. 515,168

Claims priority, application Japan, Jan. 5, 1965, 40/270; June 15, 1965, 40/35,180; July 7, 1965, 40/40,308

Int. Cl. C08f *7/12*

U.S. Cl. 260—2 EP **6 Claims**

A method for polymerizing or copolymerizing an olefin oxide monomer having a 3-membered cyclic ether group in the presence of a catalyst system composed of an organoaluminum compound represented by the general formula AlX_nR_{3-n} (wherein X stands for a halogen atom, R stands for an alkyl group having 1–6 carbon atoms and *n* stands for a number of 0–2), an organic acid salt of a transition element, which furthermore optionally contains water and/or a non-cyclic halogenated ether.

3,741,917

COLD CURE HIGH RESILIENCE FOAM

Edward Lewis Morehouse, New City, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,181

Int. Cl. C08g *22/46*

U.S. Cl. 260—2.5 AH **18 Claims**

A process for producing cold cure polyether urethane foam comprising foaming and reacting a mixture com-

prising (1) organic polyol, (2) polyisocyanate, (3) blowing agent, (4) catalyst and (5) a siloxane block copolymer; mixtures suitable for use in producing said cold cure foams; and said cold cure polyether urethane foams derived therefrom.

3,741,918

POLY(OXYCAPROYL)-POLYURETHANE PRODUCTS

Joseph V. Koleske and George Magnus, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,469

Int. Cl. C08g *22/44, 22/10*
U.S. Cl. 260—2.5 AY **9 Claims**

This invention relates to the manufacture of poly(oxycaproyl)-polyurethane products which exhibit markedly improved tensile strength while retaining a high level of other mechanical properties especially compression set. These products are prepared by reacting (i) a mixture of polymeric diols which comprise defined amounts of relatively high molecular weight poly(oxycaproyl) diol and relatively low molecular weight poly(oxycaproyl) diol with (ii) a diisocyanate compound, and (iii) a difunctional chain extender, and optionally, additional ingredients such as catalyst, surfactant, blowing agent, dyes, etc. The novel solid and microcellular elastomeric products have utility in applications such as shoe soles and solid industrial tires.

3,741,919

URETHANE COMPOSITION PREPARED FROM POLYISOCYANATES AND PHOSPHONATED POLYOXYALKYLENE ESTERS

Morton Lewis, Elmhurst, Ill., assignor to Swift & Company, Chicago, Ill.

No Drawing. Original application July 30, 1969, Ser. No. 846,247, now Patent No. 3,682,988. Divided and this application Sept. 27, 1971, Ser. No. 184,262

Int. Cl. C08g *22/14, 22/44*
U.S. Cl. 260—2.5 AR **18 Claims**

Phosphonated polyoxyalkylene ethers are produced by reacting a halogen-containing polyoxyalkylene ether with an aliphatic or aromatic phosphite. The resulting compositions are used to prepare flame resistant, non-rigid polyurethane foams.

3,741,920

MANUFACTURE OF THERMAL SHOCK RESISTANT FOAMS

Franz Weissenfels, Siegburg am Grafenkreuz, and Hans Jünger, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Continuation-in-part of application Ser. No. 31,418, Apr. 23, 1970. This application Feb. 28, 1972, Ser. No. 230,089

Claims priority, application Germany, Apr. 24, 1969, P 19 20 867.4

Int. Cl. C08j *1/26, 1/22*
U.S. Cl. 260—2.5 FP **6 Claims**

A phenolic foam having improved resistance to fire, heat and abrupt changes in temperature is prepared by foaming and hardening an intimate mixture of

(a) a conventional foamable phenolic resole resin containing a blowing agent, a hardener and a surface active agent, and

(b) in the range of 2 to 20 weight percent, based on the phenolic-resin, of a flowable hydroxyalkylated phenol.

3,741,921

FLAME RETARDANT POLYURETHANE FOAMS BASED ON POLYETHERS FROM 4,4,4 - TRICHLORO-1,2-EPOXYBUTANE

Milton Lapkin, Barrington, R.I., assignor to Olin Corporation

No Drawing. Continuation-in-part of application Ser. No. 62,784, June 10, 1970, which is a division of application Ser. No. 786,772, Dec. 24, 1968, which in turn is a continuation-in-part of application Ser. No. 563,714, July 7, 1966, all now abandoned. This application May 1, 1972, Ser. No. 249,119

Int. Cl. C08g *22/46, 22/16*
U.S. Cl. 260—2.5 AS **10 Claims**

Flame retardant polyurethane foams and a process for preparing them are disclosed. The process comprises reacting, in the presence of a catalyst, and a foaming agent, an organic isocyanate with a chlorinated polyhydroxy polyether prepared by reacting a dextrose- or sucrose-based material with 4,4,4-trichloro-1,2-epoxybutane.

3,741,922

AQUEOUS LATEX PAINT THICKENING COMPOSITION

Ronald L. Glomski and Albert B. Savage, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 696,984, Jan. 11, 1968, which is a continuation-in-part of application Ser. No. 484,760, Sept. 2, 1965. This application Apr. 22, 1971, Ser. No. 136,550

Int. Cl. C09d *3/80, 5/04*
U.S. Cl. 260—17 R **5 Claims**

This application discloses thickeners for aqueous polymer latex composition, the thickeners consisting of an intimate blend of cellulose ethers, said blend having a viscosity in 2 percent aqueous solution at 20° C. of from 1000 to 20,000 centipoises, said blend consisting of one water-soluble hydroxyalkyl alkyl cellulose ether having from 2 to 4 carbon atoms in the hydroxyalkyl group and 1 to 2 carbons in the alkyl group and having a viscosity of a 2 percent aqueous solution at 20° C. of greater than 10 000 centipoises and another water-soluble hydroxyalkyl alkyl cellulose ether having from 2 to 4 carbons in the hydroxyalkyl group and 1 to 2 carbons in the alkyl group and having a viscosity in 2 percent aqueous solution at 20° C. of less than 1000 centipoises.

3,741,923

ELECTROPHORETIC COATING COMPOSITION CONTAINING A HEAT-CURABLE ACRYLATE RESIN, A FINE PARTICULATE COPOLYMER AND A PLASTICIZER

Peter Fritsche and Heidemarie Hulsmann, Hiltrup, Germany, assignors to Glasurit-Werke M. Winkelmann G.m.b.H., Hamburg-Wandsbek, Germany

No Drawing. Filed July 7, 1971, Ser. No. 160,536

Claims priority, application Germany, Aug. 10, 1970, P 20 39 677.4

Int. Cl. C08f *45/26*
U.S. Cl. 260—23 AR **6 Claims**

An electrophoretic coating composition useful in preparing textured coatings is prepared by emulsifying a co-

polymer component II in alkaline ammonium and/or strong organic nitrogen bases in the presence of water to a stable dispersion. The copolymer component II is 10–25 percent by weight of the total composition and has therein

(a) 60–95 percent by weight of styrene,
(b) 0.5–10 percent by weight of α,β-unsaturated dicarboxylic acid having 3–5 carbon atoms, and
(c) 4.5–30 percent by weight of α,β-vinyl or α,β-vinylidene compound copolymerized therewith.

15–20 percent by weight of a plasticizer component III is added to the dispersion of component II at a pH of at least 8.5. The plasticizers of component III are compatible with components II and the later-mentioned component I, such as esters of phthalic acid, isophthalic acid, terephthalic acid, adipic acid, sebacic acid, glycolic acid, tartaric acid, citric acid, ricinoleic acid and mxtures thereof. To the dispersion of components II and III a solution of acrylate resin component I in organic solvents is added and the pH is adjusted to 8.2±0.3. Acrylate resin component I is 60–70 percent by weight of the composition and contains

(a) 50–90 percent by weight of an ester of acrylic or methacrylic acid with an aliphatic monoalcohol having 1–8 carbon atoms,
(b) 1–15 percent by weight of an α,β-unsaturated dicarboxylic acid having 3–5 carbon atoms, and
(c) 5–49 percent by weight of an α-β-vinyl or α-β-vinylidene compound copolymerized therewith. The dispersion of components I, II, and III is diluted with water to a solids content of about 5–20 percent.

3,741,924
RUBBER COMPOSITION
Taisuke Okita, Toyonaka, and Nobuyuki Yoshida, Takatsuki, Japan, assignors to Taoka Dyestuffs Manufacturing Co. Ltd., Osaka, Japan
No Drawing. Filed Feb. 13, 1970, Ser. No. 11,314
Claims priority, application Japan, Mar. 8, 1969, 44/17,827
Int. Cl. C09j *3/26*
U.S. Cl. 260—27 R **7 Claims**

There is obtained an ethylene-propylene-non-conjugated diene terpolymer rubber composition with improved tackiness and processability in the unvulcanized state, but nevertheless, with substantially the same physical properties in the vulcanized state as that of a conventional composition of said terpolymer rubber, by incorporating into 100 parts by weight of said terpolymer 1–40, preferably 2–30, parts by weight of an ethylene-α-olefin copolymer and 0.5–30, preferably 1–20, parts by weight of an alkylphenol-formaldehyde resin, a modified alkylphenol-formaldehyde resin, rosin, rosin ester, or a mixture of these resins.

3,741,925
WATER-REPELLENT ETHYLENE COPOLYMER DISPERSIONS
John William McDonald, Memphis, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Apr. 2, 1971, Ser. No. 130,842
Int. Cl. C08f *45/52, 45/24;* **C08j** *1/40*
U.S. Cl. 260—28.5 R **14 Claims**

An aqueous ethylene copolymer dispersion, from which an improved water-repellent coating can be applied, is provided. The dispersion comprises an ethylene copolymer, an ammonium salt of a mineral acid, and from 0 to 25 percent by weight, based on solids weight, of an amino-formaldehyde resin. An article having thereon a coating of the dispersed phase of the dispersion and a process for preparing the article are also provided.

3,741,926
CEMENT COMPRISED OF ZINC OXIDE AND ACRYLIC ACID COPOLYMER
Anton Jurecic, Springfield, Del., assignor to Pennwalt Corporation, Philadelphia, Pa.
No Drawing. Continuation-in-part of abandoned application Ser. No. 18,319, Mar. 10, 1970. This application July 1, 1971, Ser. No. 159,018
Int. Cl. C08f *45/24, 45/04*
U.S. Cl. 260—29.6 M **5 Claims**

A copolymer comprised of 10 to 90 mole percent of acrylic acid and at least one mono-olefinically unsaturated polycarboxylic acid selected from the group consisting of glutaconic acid, aconitic acid, citraconic acid, mesaconic acid, itaconic acid, fumaric acid, maleic acid and tiglic acid, is mixed with zinc oxide to prepare improved cements for dental and orthopedic use.

3,741,927
TREAD STRIPS FOR TIRES FORMED OF HOMOPOLYMERS OF BUTADIENE
Karl-Heinz Nordsiek, Neithart Sommer, and Helmut Schwesig, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany
No Drawing. Filed Nov. 24, 1970, Ser. No. 92,537
Claims priority, application Germany, Nov. 29, 1969, P 19 60 065.8
Int. Cl. C08f *45/08, 45/28*
U.S. Cl. 260—33.6 AQ **15 Claims**

Tire tread strips for automobile tires having a good combination of wear and skid resistance are formed of a polybutadiene homopolymer composition consisting essentially of:

(a) a homopolymer of 1,3-butadiene having an average vinyl group content of 25–50%, a cis-1,4-double bond content of 10–40%, a trans-1,4-double bond content of 15–55%, a Mooney viscosity (ML–4) of between 40 and 120, and a deformation-elasticity of at least 25, whose vinyl groups are distributed along the longitudinal axis of the macromolecule toward an end thereof in a substantially decreasing manner;
(b) 5–100 parts by weight of a plasticizer, based on 100 parts by weight of polybutadiene; and
(c) 30–120 parts by weight of a carbon black, based on 100 parts by weight of polybutadiene.

3,741,928
EPOXIDE MOLDING COMPOSITIONS CONTAINING META-TOLYLENE DIAMINE AND A SILICIOUS FILLER
George A. Salensky, Metuchen, N.J., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 698,140, Jan. 16, 1968. This application July 21, 1971, Ser. No. 164,818
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 EP **10 Claims**

The disclosure of this application is directed to epoxide molding compositions, containing m-tolylenediamine and a silicious filler, which have excellent shelf life and can be molded into shaped articles characterized by excellent properties.

3,741,929
INORGANIC FLAMEPROOFING COMPOSITION FOR ORGANIC MATERIALS
Pearl Burton, Leominster, Mass., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 880,467, Dec. 8, 1969, which is a continuation of application Ser. No. 679,210, Oct. 30, 1967, which in turn is a continuation of application Ser. No. 391,004, Aug. 20, 1964, all now abandoned. This application Apr. 6, 1971, Ser. No. 131,815
Int. Cl. C08f *45/04;* **C08g** *51/04;* **C09k** *3/28*
U.S. Cl. 260—40 R **5 Claims**

A flame retardant insulation material is formed of a non-halogenated composition which is relatively stable

when exposed to irradiation. The composition includes an organic high polymeric plastic material such as polyethylene, an inorganic hydrate such as aluminum hydrate, an inorganic filler such as antimony trioxide and an antioxidant.

3,741,930

DYE RETENTIVE OLEFIN POLYMER COMPOSITIONS CONTAINING A BASIC POLYAMIDE

Alberto Bonvicini and Giuseppe Cantatore, Terni, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed July 15, 1970, Ser. No. 55,245
Claims priority, application Italy, July 16, 1969, 19,687/69
Int. Cl. C08f *29/12*
U.S. Cl. 260—41 C 18 Claims

There are disclosed textile fibers, film, tape and shaped articles comprising olefinic polymers made up, prevailingly of isotactic macromolecules and which are exceptionally retentive of dyestuffs of the acid, metallized and plasto-soluble classes. The dyeing properties of the olefin polymers are improved by the addition of a basic polyamide obtained by reacting an acrylic or methacrylic ester with one or more polyamines.

3,741,931

POLYOLEFIN RUBBERS REACTED WITH BUTADIENE RESINS

Jon W. Martin, Los Alamitos, John F. Jones, Torrance, and Jeffrey L. Bell, Anaheim, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 23, 1970, Ser. No. 92,004
Int. Cl. C08d *9/04*; C08f *45/04, 45/08*
U.S. Cl. 260—41.5 R 10 Claims

Polyolefin rubbers are reacted with a low molecular weight butadiene resin and further reinforced with a silica filler. This provides a vulcanized elastomer compound having excellent long-term compatibility and maintenance of mechanical properties when exposed to corrosive environments.

3,741,932

CURABLE EPOXY ORGANOPOLYSILOXANES HAVING PENDANT CHROMOPHORIC GROUPS

Carl M. Smith, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Apr. 10, 1972, Ser. No. 242,827
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 E 9 Claims

Organopolysiloxane having pendant oxirane groups and pendant chromophoric groups are provided. These organopolysiloxanes cure to transparent cross-linked resins which are colored or fluoresce in ultraviolet light and are compatible with other silicone resins.

3,741,933

POLYCARBAMOYLAMIDRAZONES AND THEIR PRODUCTION FROM BISAMIDRAZONES AND DIISOCYANATES

Dieter Frank, Elsenfeld, Walter Brodowski, Amorbach, and Peter Hentschel, Kleinheubach, Germany, assignors to Glanzstoff AG, Wuppertal-Elberfeld, Germany

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,470
Claims priority, application Germany, Dec. 16, 1970, P 20 61 895.5
Int. Cl. C08g *22/02, 33/10*
U.S. Cl. 260—47 CB 18 Claims

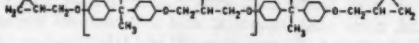
Polycarbamoylamidrazones and their production by reaction of bisamidrazones and diisocyanates as monomers in an organic solvent medium at temperatures of about 0° C. to 100° C. The resulting high molecular weight polymer can be molded into useful articles and especially made into transparent films.

3,741,934

METHOD FOR HARDENING AN EPOXY HAVING AT LEAST TWO 1,2-EPOXY GROUPS

Adolf Heslinga, Pijnacker, and Petrus Jan Napjus, Delft, Netherlands, assignors to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer, The Hague, Netherlands

Filed Mar. 26, 1971, Ser. No. 128,269
Claims priority, application Netherlands, Apr. 4, 1970, 7005967
Int. Cl. C08g *30/10*
U.S. Cl. 260—47 EC 12 Claims



Epoxy resins are hardened with primary, secondary or tertiary amines, with organic acid anhydrides or with phenols. A catalyst may be used.

According to the invention a polyfunctional epoxy resin i.e. an epoxy resin with on the average at least two epoxy groups per molecule is hardened by reacting it with an α-halogenalkyl ether that on the average has at least two α-halogenalkyl ether groups in the molecule.

In FIG. 1 the reaction of an α-chloroalkyl ether in which alkyl is methyl and in which two α-chloromethyl groups are present in the molecule with an epoxy compound is depicted but for reasons of clearness the epoxy compound shown has only one epoxy groups. According to the invention two such groups must at least be present. R''' is a phenyl group. Catalysts may be used in the hardening process according to the invention.

3,741,935

HIGH SOLIDS THERMOSETTING BETA-KETO ESTER COATING COMPOSITIONS

Rostyslaw Dowbenko, Gibsonia, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,174
Int. Cl. C08g *15/00*
U.S. Cl. 260—65 6 Claims

High solids, thermosetting coating compositions are produced from a reaction product having a plurality of beta-keto ester groups and condensation products of formaldehyde with melamine, urea or benzoguanamine. Reactive copolymers may also be admixed with the above compositions for co-curing.

3,741,936

THERMOPLASTIC MOLDING COMPOSITIONS BASED ON SATURATED POLYESTERS

Walter Herwig, Frankfurt am Main, and Rudolf Uebe and Gunter Freund, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 51,742, July 1, 1970. This application Jan. 6, 1972, Ser. No. 215,934
Claims priority, application Germany, July 4, 1969, P 19 33 969.6
Int. Cl. C08g *39/04*
U.S. Cl. 260—75 S 9 Claims

The present inveniton provides a molding composition which comprises a linear saturated polyester, an inorganic solid material having a particle size of less than 5 microns and an alkali metal paraffin sulfonate or an alkali metal olefin sulfonate containing 8 to 30 carbon atoms, which molding composition can be worked up in the thermoplastic range and from which molded

articles are obtained which can very easily be removed from the mold and which have a very good quality of the surface.

3,741,937

ALKYD RESINS INCLUDING CYCLOHEXANE MONOCARBOXYLIC ACID AS A COMPONENT THEREOF

Heinz Ehring, Krefeld-Verberg, and Bernd Peltzer, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,101
Claims priority, application Germany, Jan. 7, 1971, P 21 00 446.6
Int. Cl. C08g *17/14*; C09d *3/64*
U.S. Cl. 260—76 1 Claim

The invention relates to alkyd resins containing residues of at least one cycloaliphatic monocarboxylic acid.

3,741,938

PROCESS FOR THE PRODUCTION OF THERMOSTABLE POLYMERS

Yoshio Iwakura and Keikichi Uno, Tokyo, and Kazuma Niume, Kawasaki, Japan, assignors to Maruzen Oil Company Limited, Osaka, Japan

No Drawing. Filed Apr. 16, 1971, Ser. No. 134,890
Claims priority, application Japan, Dec. 30, 1970, 45/129,896
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 AA 20 Claims

A process is provided for producing thermostable polymers from two different monomers, at least one of which is solid at the polymerization temperature. The process comprises dissolving a diisocyanate generator and another monomer such as a diamine, diol or diaminodicarboxylic acid in a solvent, removing the solvent from the resulting solution to obtain a mixture of above monomers mixed intimately at a molecular level, then heating said mixture in the solid phase to polymerize the two different monomers.

3,741,939

POLYMERIZING CAPROLACTAM

Paul Wittmer, Landau, Guenter Becht, Speyer, and Helmut Doerfel, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Rhineland-Pfalz, Germany

No Drawing. Filed Nov. 8, 1968, Ser. No. 774,485
Claims priority, application Germany, Nov. 11, 1967, P 17 20 322.4
Int. Cl. C08g *20/12*
U.S. Cl. 260—78 L 7 Claims

An improved process for polymerizing caprolactam in the presence of water, polymerization catalysts and/or polymerization regulators at temperatures of from 120° to 320° C. and pressures of more than 2000 atmospheres.

3,741,940

PROCESS FOR THE PREPARATION AND RECOVERY OF ESTERIFIED COPOLYMERS CONTAINING MALEIC ANHYDRIDE

William J. Heilman, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed May 20, 1971, Ser. No. 145,552
Int. Cl. C08f *27/14*
U.S. Cl. 260—78.5 T 9 Claims

This invention relates to a method of recovering the partially esterified product of certain polyanhydrides, such as 1-hexene-maleic anhydride copolymers, from solution with the ester content substantially unchanged by maintaining the temperature during the recovery at all times below about 80° C. In the case of the methyl esterified copolymers containing at least some diester groups, hydrolysis to convert a portion of the ester groups to acid groups occurs readily at ambient temperature upon contact of the copolymers with water.

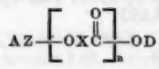
3,741,941

POLYESTERS WITH TERMINAL POLYHYDROXY GROUPS

Thomas A. Ashe, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 776,750, Nov. 18, 1968. This application Mar. 3, 1971, Ser. No. 120,772
Int. Cl. C08g *17/14*
U.S. Cl. 260—78.3 R 5 Claims

Polyesters represented by the general structure



useful as film-formers in coating compositions.

3,741,942

POLYIMIDES

James V. Crivello, Mechanicville, N.Y., assignor to General Electric Company

No Drawing. Filed July 16, 1971, Ser. No. 163,411
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 UA 13 Claims

Polyimide compositions are obtained by the reaction of a bisimide and an organic dithiol. The resulting polymeric compositions have physical properties which make them suitable for coating, insulating and molding applications.

3,741,943

PRODUCTION OF MALEIC ACID COPOLYMERS AND HYDROXY DERIVATIVES THEREOF

Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

No Drawing. Original application Apr. 16, 1969, Ser. No. 816,805, now Patent No. 3,629,357. Divided and this application May 3, 1971, Ser. No. 139,829
Int. Cl. C08f *1/00, 15/02, 27/14*
U.S. Cl. 260—78.5 T 5 Claims

Styrene or like monomer is copolymerized with maleic anhydride in the presence of water and water-miscible organic solvent to simultaneously effect copolymerization and hydrolysis and directly provide an acid copolymer which can be reacted with monoepoxide to provide derivatives having increased hydroxy functionality.

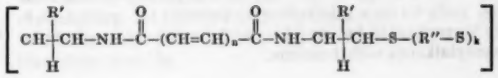
3,741,944

POLYMERIC REACTION PRODUCT OF A DITHIOL WITH 2,2' - ALKYLENEBIS - 2-OXAZOLINE OR OXAZINE

Donald A. Tomalia, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Application Jan. 28, 1971, Ser. No. 110,752, which is a division of application Ser. No. 833,765, June 16, 1969, now Patent No. 3,639,395. Divided and this application Feb. 8, 1972, Ser. No. 224,617
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 1 Claim

A polymeric material composed of repeating units of the formula



where R′ is hydrogen or alkyl of from 1 to 4 carbon atoms, n is an integer from 1 to 3, R″ is of the scope of R′ or cycloalkylene of from 4 to 7 carbon atoms or substituted cycloalkylene of from 5 to 12 carbon atoms or phenyl, and k is an integer greater than 1.

The polymeric material, when in liquid form, is adapted to be used as a curing agent to cure polyepoxides to obtain epoxy resins.

3,741,945

VINYL ALCOHOL COPOLYMERS CONTAINING HYDROXY SULFONYL GROUPS

Guy Bourat, Bourg-la-Reine, and Rodolphe Margraff, Ris-Organgis, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Continuation of abandoned application Ser. No. 821,947, May 5, 1969. This application Aug. 27, 1971, Ser. No. 175,693

Int. Cl. C08f *27/06, 47/00*

U.S. Cl. 260—79.3 R **14 Claims**

Vinyl alcohol copolymers partially etherified with hydroxy sulphonyl organic radicals and optionally partially crosslinked by ether groups are useful in making cation-exchange membranes.

3,741,946

EMULSION COPOLYMERIZATION OF ISOBUTYL-VINYL ETHER AND VINYL CHLORIDE

Wiley E. Daniels, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 594,651. Nov. 16, 1966. This application Aug. 7, 1970, Ser. No. 62,134

Int. Cl. C08f *1/60*

U.S. Cl. 260—87.5 G **7 Claims**

A process for preparing copolymers of isobutylvinyl ether and vinyl chloride having an η_{rel} (1% weight/volume in toluene) of 1.3 to 1.5, a volume strength of 3,000 to 5,000 p.s.i.g., and an elongation of 3.5 to 7%, which consists of copolymerizing isobutylvinyl ether and a portion of the vinyl chloride to be polymerized in an aqueous phase containing a high purity sodium alkyl sulfate and potassium persulfate so as to yield a 40–50% conversion followed by equal incremental additions of the remaining portions of the vinyl chloride to be copolymerized for a period of time until constant pressure is obtained, and subsequently isolating the resultant copolymer by coagulation with a primary aliphatic alcohol or a water-soluble salt of a potassium cation.

3,741,947

POLYMERIZATION AND COPOLYMERIZATION OF ARYL-SUBSTITUTED OLEFINS CONTAINING HALOGEN IN THE NUCLEUS

Erwin Schrott, Gerhard Bier, and Albert Gustav Martin Gumboldt, Frankfurt am Main, Germany, assignors to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Jan. 14, 1959, Ser. No. 786,683

Claims priority, application Germany, Jan. 16, 1958, F 24,823

Int. Cl. C08f *7/02*

U.S. Cl. 260—91.5 **2 Claims**

New isotactic polymers of halophenylalkenes are produced by using as the polymerization catalyst a titanium trichloride produced by reducing titanium tetrachloride with ethyl aluminum sesquichloride at 0° C., then heating it at 100° C. and finally activating it with diethylaluminum chloride. Among the new crystalline polymers described are poly-4-(para-chlorophenyl)-butene-(1); poly-4-(3,4-dichlorophenyl)-butene-(1); and copolymers of halophenylalkenes with 1-olefins.

3,741,948

PROCESS FOR THE PREPARATION OF N-PROTECTED - α - L-GLUTAMYL - S - BENZYL-L-CYSTEINYLGLYSINES

Masuo Murakami, Yuji Kawashima, Hideyo Kawakami, and Osamu Hasegawa, Tokyo, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

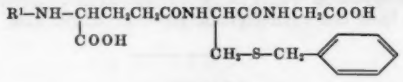
No Drawing. Filed May 28, 1970, Ser. No. 41,636

Claims priority, application Japan, June 19, 1969, 44/47,920

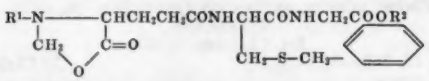
Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **4 Claims**

An improved process is provided for the preparation of N-protected-α-L-glutamyl-S-benzyl-L-cysteinylglycines of the formula



in which R^1 represents a protecting group for the amino group. These compounds are valuable as intermediates for the production of glutathione, involving hydrolysis of a compound of the formula



in which R^1 has the same meaning as above and R^2 represents a hydrogen atom or a lower alkyl group. The hydrolysis is effected in the absence of an organic solvent miscible with water to prevent formation of undesirable compounds.

3,741,949

EXTRACTION OF BACITRACIN WITH NON-IONIC RESINS

Bernard Ores, Montreuil-sous-Bois, and Claude Rauber, Saint-Denis, France, assignors to Roussel-UCLAF

No Drawing. Filed Oct. 7, 1970, Ser. No. 78,963

Claims priority, application France, Oct. 10, 1969, 6934774

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **4 Claims**

A novel process for the extraction of bacitracin from fermentation broths wherein the said antibiotic was formed by micro-organisms, by adsorption on nonionic resins.

3,741,950

METHOD FOR HARDENING GELATIN

Mitsunori Sugiyama, Reiichi Ohi, Tadao Shishido, and Masaki Omura, Ashigara-machi, Japan, assignors to Fuji Photo Film Co., Ltd., Nakanuma, Minami Ashigara-shi, Kanagawa, Japan

No Drawing. Filed July 2, 1971, Ser. No. 159,519

Claims priority, application Japan, July 2, 1970, 45/57,911

Int. Cl. C09h *7/00*

U.S. Cl. 260—117 **14 Claims**

A method for hardening proteins using as the hardener at least one compound of the general formula

wherein A and B are necessary atoms for forming a heterocyclic ring, Y represents sulfur or selenium and X stands for an anion, is disclosed. The hardening effects of the compounds are further potentiated when used in combination with at least one metal ion such as manganese, cobalt, nickel, copper, zinc, silver or cadmium ion.

3,741,951

1-(p-BENZAMIDO)-3-METHYL-TRIAZENES

Fritz K. Hess, Hudson, and Patrick B. Stewart, St. Andrews East, Quebec, Canada, Karl Zeile, Ingelheim am Rhein, Germany, and Kurt Freter, Beaconsfield, Quebec, Canada, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

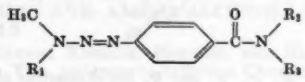
No Drawing. Filed Dec. 16, 1971, Ser. No. 208,912

Claims priority, application Austria, Dec. 21, 1970, A 11,481/70

Int. Cl. C07c *115/00*

U.S. Cl. 260—140 **4 Claims**

Compounds of the formula



wherein

R_1 is cyclohexyl, phenyl-(alkylene of 1 to 2 carbon atoms) or pyridyl-(alkylene of 1 to 2 carbon atoms),
R_2 is hydrogen or alkyl of 1 to 2 carbon atoms, and
R_3 is straight or branched alkyl of 1 to 4 carbon atoms or cycloalkyl of 3 to 6 carbon atoms;

the compounds are useful as immunosuppressants.

3,741,952

SYNERGISTIC ANTISEPTIC COMPOSITIONS CONTAINING A HALOGENATED ANILIDE OF THIOPHENE CARBOXYLIC ACID

David Taber, 2000 Lincoln, Evanston, Ill. 60433

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,093

Int. Cl. C11d *3/48, 9/50*

U.S. Cl. 252—107 **1 Claim**

Compositions possessing antibacterial activity through the effects of a synergistic combination of thiophene-2-carboxy-4'-bromoanilide and either hexaclorophene or tribromosalicylanilide.

3,741,953

GUANIDINOSULFONYLPHENYL AZO PIGMENTS HAVING ACETOACETAMIDOPHENYL COUPLING COMPONENT RADICALS

Armand Henrard, Gand, Belgium, and Fritz Kehrer and Hans Wasem, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

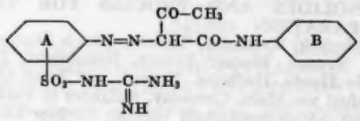
No Drawing. Continuation-in-part of application Ser. No. 691,707, Dec. 19, 1967, now Patent No. 3,598,803. This application Sept. 30, 1970, Ser. No. 77,015

Claims priority, application Switzerland, Jan. 17, 1967, 630/67, Patent 476,802; Jan. 26, 1967, 1,173/67, Patent 475,304

Int. Cl. C09b *29/32*

U.S. Cl. 260—193 **3 Claims**

Pigments of the monoazo series which contain a nuclearly bound sulfonic acid imido-ureide group and are, e.g., of the formula



are useful for the coloration of plastics, textiles, paper, natural resins and rubber. The resultant dyeings are very fast to migration and light and show good heat stability.

3,741,954

MONOAZO AND DISAZO COMPOUNDS HAVING A NITROANILINOSULFONYLOXYPHENYL GROUP

Ruedi Altermatt, Tecknau, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

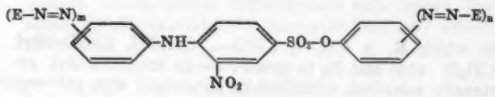
No Drawing. Filed Sept. 23, 1970, Ser. No. 74,924

Claims priority, application Switzerland, Oct. 21, 1969, 15,709/69

Int. Cl. C09b *29/34*

U.S. Cl. 260—205 **15 Claims**

Compounds of the formula



and substituted derivatives thereof,

wherein each E is independently aryl or acylacetyl, e.g., phenyl, naphthyl, thiazolyl, benzothiazolyl, thiadiazolyl, imidazolyl, pyrazolyl and acyl

and substituted derivatives thereof,

m is 0 or 1, and
n is 0 or 1, with the proviso that the sum of *m* and *n* is 1 or 2.

These dyes are highly suitable for dyeing and printing fibres, yarns and textiles consisting of synthetic or regenerated organic materials of high molecular weight and hydrophobic character.

3,741,955

3β-HYDROXY - 14,15β-OXIDO - 14β-BUFA-4,20,22-TRIENALIDE-3β-(α-L-RHAMNOPYRANOSIDE)

Kurt Radscheit, Kelkheim, Taunus, Ulrich Stache, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Werner Haede, Hofheim, Taunus, and Ernst Lindner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Apr. 6, 1971, Ser. No. 131,808

Claims priority, application Germany, Apr. 8, 1970, P 20 16 704.8

Int. Cl. C07c *173/00*

U.S. Cl. 260—210.5 **1 Claim**

Cardioactive 3β - hydroxy-14,15β-oxido-14β-bufa-4,20,22-trienolide-3β-(α-L-rhamnopyranoside).

Method of making this compound by acylating and dehydrating proscillaridin; forming a halohydrin from the resulting Δ^{14}-olefin; dehydrohalogenating to form the 14,15β-epoxide; and hydrolyzing to form the free L-rhamnopyranoside.

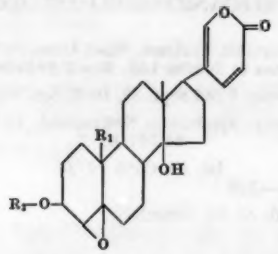
3,741,956

CARDIO-ACTIVE GLYCOSIDES OF 3β,14-DIHYDROXY - 4,5β - OXIDO - 14β - BUFA - 20,22-DIENOLIDES AND PROCESS FOR THEIR PREPARATION

Kurt Radscheit, Kelkheim, Taunus, Ulrich Stache, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Werner Haede, Hofheim, Taunus, and Ernst Lindner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Apr. 29, 1971, Ser. No. 138,458
Claims priority, application Germany, May 2, 1970, P 20 21 556.9
Int. Cl. C07c *173/00*
U.S. Cl. 260—210.5 2 Claims

3-hydroxy-4,5β-oxido - bufadienolides of the general formula



in which R_1 is CH_3—, CHO—, CH_2OH, CH_2O-alkyl, CH_2O acyl and R_2 is mono-, di- or trisaccharidyl, optionally esterified, etherified or condensed with carbonyl compounds, e.g. 3β,14 - dihydroxy-4,5β-oxido-14β-bufa-20,22-dienolide, 3β-(α-L-rhamnoside) and 3β,14-dihydroxy - 4,5β-oxido-14β-bufa-20,22-dienolide, 3β-(β-D-glucoside).

Method for making these compounds (1) by acylating the corresponding glycosides, reacting the acylates with HOHal-forming agents to the corresponding 4,5-halohydrins which are then converted into 4,5β-epoxides by splitting off hydrogen halide, or (2) by reacting the corresponding aglycones of the above formula (R_2=H) with acylated 1-halopyranoses in inert solvents in the presence of silver salts, and finally hydrolyzing the acylated compounds to yield the free glycosides. These compounds have strong positive inotropic action and a pronounced cardioactive efficacy.

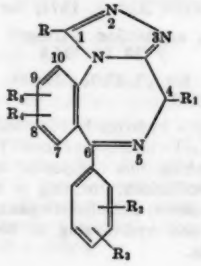
3,741,957

2-ACYL HYDRAZINO BENZODIAZEPINES

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

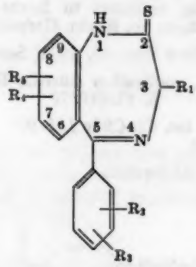
No Drawing. Continuation-in-part of abandoned application Ser. No. 807,933, Mar. 17, 1969, and a division of application Ser. No. 872,394, Oct. 29, 1969. This application July 15, 1971, Ser. No. 165,774
Int. Cl. C07d *53/06*
U.S. Cl. 260—239 BD 3 Claims

6 - phenyl - 4H - s-triazolo[4,3-a][1,4]benzodiazepines of the Formula IV:



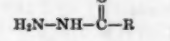
(IV)

wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, phenyl, benzyl and —COOR' in which R' is alkyl of 1 to 4 carbon atoms, inclusive; wherein R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; and wherein R_2, R_3, R_4 and R_5 are selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino and dialkylamino in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive, are produced by condensing a 1,3-dihydro-5-phenyl-2H-1,4-benzodiazepine-2-thione of the Formula I:



(I)

wherein R_1, R_2, R_3, R_4 and R_5 are defined as above, with an organic acid hydrazide of the forumla:



(II)

wherein R is defined as above.

The new products of Formula IV including their pharmacologically acceptable acid addition salts are useful as sedatives, tranquilizers and muscle relaxants in mammals and birds.

3,741,958

6-AMINOPENICILLANIC ACID DERIVATIVES AND PROCESS FOR PRODUCING THEM

Peter Wolfgang Henniger, Leiden, Netherlands, assignor to Koninklijke Nederlandsche Gist-en Spiritusfabriek N.V., Delft, Netherlands

No Drawing. Continuation-in-part of application Ser. No. 834,544, June 18, 1969. This application Dec. 15, 1970, Ser. No. 98,445.
Claims priority, application Great Britain, Dec. 18, 1969, 61,843
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 10 Claims

Novel derivaties of 6-isocyanatopenicillanic acid, their preparation, their use as intermediates in producing penicillines and novel penicillanic acids. The invention further relates to penicillines produced from 6-isocyanatopenicillanic acid and to compositions for therapeutic use containing them.

3,741,959

ACYLATION OF 7-AMINOCEPHALOSPORIN OR 6-AMINOPENICILLIN

Brian Edgar Looker, Greenford, John Attenburrow, Uxbridge, and Edward McKenzie Wilson, Westmoreland, England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

No Drawing. Filed Dec. 17, 1970, Ser. No. 99,328
Claims priority, application Great Britain, Dec. 23, 1969, 62,711/69
Int. Cl. C07d *99/16, 99/24*
U.S. Cl. 260—239.1 21 Claims

A process for acylating a cephalosporin or penicillin nucleus comprises reacting the 7- or 6-amino group with

an acyl chloride or bromide in the presence of an oxirane, e.g. ethylene oxide, a propylene oxide which binds hydrogen halide liberated in the reaction.

3,741,960

AMIDINOUREIDO CYCLOALIPHATIC PENICILLINS

Harvey E. Alburn, West Chester, and William Dvonch, Radnor, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Aug. 12, 1971, Ser. No. 171,367
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 4 Claims

Amidinoureido cycloaliphatic penicillins are described as novel compounds for use as antibacterial agents, these compounds, being particularly useful in the treatment of infectious diseases caused by gram-positive and gram-negative bacteria, including those caused by Pseudomonas strains and Proteus strains and penicillin-resistant strains of *Neisseria gonorrhoeae*.

3,741,961

METAL CATALYZED CYCLIZATION OF ORGANIC NITRILES AND AMINO ALCOHOLS OR AMINO THIOLS

James Edward Kmiecik, Houston, and Heinz Schulze, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Sept. 3, 1970, Ser. No. 69,502
Int. Cl. C07d 93/06
U.S. Cl. 260—243 R 20 Claims

Amino alcohols or amino thiols are contacted with organic nitriles under alkaline or neutral conditions in the presence of metal catalysts to form 2-oxazolines, 2-thiazolines, or related compounds, such as benzoxazoles or oxazines.

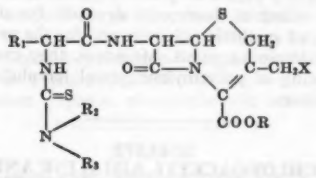
3,741,962

α-THIOUREIDOCEPHALOSPORANIC ACID COMPOUNDS

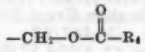
Hermann Breuer, Burgweinting, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed May 21, 1971, Ser. No. 145,955
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 11 Claims

New α-thioureidocephalosporanic acid compounds of the following general formula, and their salts,



wherein R is hydrogen, lower alkyl, aralkyl, a salt forming ion or the group



R_1 is hydrogen, lower alkyl, cyclo-lower alkyl, unsaturated cyclo-lower alkyl, aryl, aralkyl or a heterocyclic group; R_2 is hydrogen or lower alkyl; R_3 is hydrogen, lower alkyl, lower alkenyl, phenyl, benzoyl, lower alkoxy-lower alkyl or (carbo-lower alkoxy)lower alkyl; R_4 is lower alkyl, aryl or aralkyl and X is hydrogen, hydroxy, lower alkanoyloxy, aroyloxy, aralkanoyloxy, the radical of a nitrogen base, a quaternary ammonium radical or together X and R represent a bond linking carbon and oxygen in a lactone ring; are useful as antibacterial agents.

3,741,963

WATER SOLUBLE N-CARBOXY DERIVATIVES OF CEPHRADINE AND CEPHALEXIN AND A METHOD FOR THEIR PREPARATION

Friedrich Dursch, Hopewell, N.J., and Octavian Kocy, Bronx, N.Y., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed July 28, 1971, Ser. No. 166,979
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 4 Claims

N-carboxy derivatives of cephradine and of cephalexin are provided which are readily water soluble and are useful as antibiotics which may be administered parenterally.

3,741,964

METHOD FOR PRODUCING AMINO-3,4-DIHYDRO-2H-1,3,5-THIADIAZIN-2-ONES

John P. Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 1, 1971, Ser. No. 149,051
Int. Cl. C07d 93/26
U.S. Cl. 260—243 R 7 Claims

Novel amino-3,4-dihydro-2H-1,3,5-thiadiazin-2-ones are produced by the reaction of 1-(1-chloro-N-methyl-formamido)-2-methylpropyl isothiocyanate with amines. These amino-3,4-dihydro-2H-1,3,5-thiadiazin-2-ones are useful as herbicides.

3,741,965

7-[D-(α-AMINO-α-PHENYL-, 2 - THIENYL- AND 3-THIENYL-ACETAMIDO)] - 3 - (3-METHYLISOXAZOL - 5 - YL) - CARBONYLTHIOMETHYL - 3-CEPHEM-4-CARBOXYLIC ACIDS

John Michael Essery and Lee Cannon Cheney, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Feb. 25, 1972, Ser. No. 229,546
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 44 Claims

7-[D-(α-amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido)] - 3 - (3 - methylisoxazol - 5-yl)carbonylthiomethyl-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitis in cattle and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria. Also included in this invention are the corresponding pivaloyloxymethyl, acetoxymethyl, methoxymethyl, acetonyl and phenacyl esters of such acids and their nontoxic, pharmaceutically acceptable acid addition salts.

3,741,966

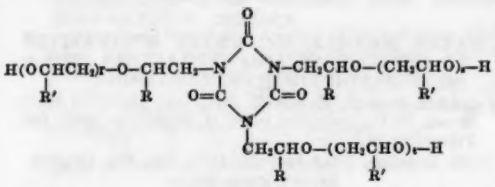
ANTISTATIC FIBER CONTAINING HIGH MOLECULAR WEIGHT TRIS(B - HYDROXYALKYL)-ISOCYANURATE-ALKYLENE OXIDE ADDUCTS

Gene C. Weedon, Richmond, Va., and Edwin D. Little, Convent Station, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 80,488, Oct. 13, 1970, which is a continuation-in-part of application Ser. No. 873,689, Nov. 3, 1969, both now abandoned. This application Jan. 3, 1972, Ser. No. 215,974
Int. Cl. C07d 55/38
U.S. Cl. 260—248 NS 7 Claims

It has been found that an antistatic fiber of polyamide or polyester can be prepared by uniformly dispersing in

the polymer between about 1 percent and about 10 percent of a compound represented by the formula



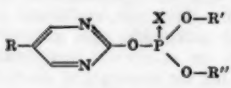
wherein R and R′ are independently at each occurrence hydrogen, methyl or ethyl and *r*, *s*, and *t* are integers from 31 to about 200. Preferably, the compound is a block copolymer of ethylene oxide, propylene oxide and tris(B - hydroxyethyl)isocyanurate having a molecular weight greater than 9,000, with the ethylene oxide moiety making up 10 to 95 percent of the molecular weight of the compound.

3,741,967
PHTHALAZINE DERIVATIVES
Elvio Bellasio, Albate, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy
No Drawing. Filed Mar. 3, 1970, Ser. No. 16,239
Int. Cl. C07d *51/06*
U.S. Cl. 260—250 A **3 Claims**

New 2,3-dihydro-1H-pyrazolo(1,2-b)phthalazine - 1,5-(10H)-diones and 3,4-dihydropyridazino(1,2 - b)phthalazine-1(2H),6(11H)-diones and process for the manufacture thereof. The compounds have anti-inflammatory activity.

3,741,968
CERTAIN O-(2-PYRIMIDYL) PHOSPHATES AND THEIR USE AS INSECTICIDES
Albert Howard Haubein, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed Nov. 12, 1971, Ser. No. 198,415
Int. Cl. C07d *51/36*
U.S. Cl. 260—251 P **5 Claims**

Disclosed are compounds of the formula:



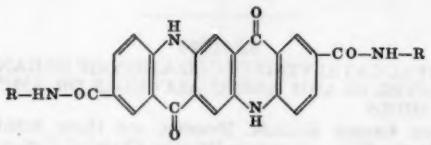
in which R is selected from the group consisting of H, F, Cl, Br and I, R′ and R″ are selected from the group consisting of CH_3 and C_2H_5, and X is selected from the group consisting of O and S. These compounds have utility as insecticides.

3,741,969
CERTAIN 3 - (β-CARBETHOXYETHYL)- AND 3 - (β-CARBOXYETHYL) - 4 - PHENYL-3,4-DIHYDRO- AND 1,2,3,4-TETRAHYDRO-QUINAZOLINES
Hans Ott, Basel-Land, Switzerland, assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Original application Dec. 9, 1966, Ser. No. 600,403, now Patent No. 3,577,557. Divided and this application Jan. 18, 1971, Ser. No. 107,477
The portion of the term of the patent subsequent to Nov. 25, 1986, has been disclaimed
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 Q **8 Claims**

The invention discloses compounds of the class of 6-phenyl-3,4-dihydro[1,5]benzodiazocin-2-(IH)-ones useful as tranquilizers. Also disclosed is preparation of said compounds featuring intermediates which are 1,5-methano-1,5-benzodiazocin-2-ones which are converted by acid treatment to the corresponding 6-phenyl-3,4,5,6-tetrahydro[1,5]benzodiazocin-2-(1H)-ones which in turn may be oxidized to obtain the first-mentioned class of compounds. The bridged intermediates are prepared by dehydration of a 3-(β-carboxyethyl)-4-phenyl-1,2,3,4-tetrahydroquinazoline which is prepared by reduction of a 3-(β-carboxyethyl)-4-phenyl-3,4-dihydroquinazoline which is prepared by hydrolysis of a corresponding ester.

3,741,970
LINEAR ALKYL-AMIDO TRANS-QUINACRIDONE PIGMENTS
Otto Fuchs, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Dec. 3, 1970, Ser. No. 94,963
Claims priority, application Germany, Dec. 4, 1969, P 19 60 897.0
Int. Cl. C07d *39/00*
U.S. Cl. 260—279 R **4 Claims**

Linear trans-quinacridones of the general formula



wherein R is ethyl, n-butyl or n-hexyl and process for preparing them. Said pigments have pure bluish red violet shades and are excellently suited for getting pigments of neutral red shades by mixing them with molybdate orange.

3,741,971
WATER-INSOLUBLE BENZOXANTHENE-DICARBOXYLIC ACID IMIDE DYESTUFFS AND PROCESS FOR PREPARING THEM
Otto Fuchs and Helmut Troster, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Continuation of abandoned application Ser. No. 771,608, Oct. 29, 1968. This application May 10, 1971, Ser. No. 142,048
Claims priority, application Germany, Nov. 2, 1967, P 53,937; July 6, 1968, P 17 70 818.8
Int. Cl. C07d *39/00*
U.S. Cl. 260—281 **8 Claims**

Benzoxanthene-dicarboxylic acid imide dyestuffs which dyestuffs have a yellow to greenish yellow shade and are excellently suited as fluorescent dyestuffs for the dyeing in the mass of synthetic polymers and for the preparation of daylight luminous paints. Moreover, they can be used for the dyeing of polyethylene glycol terephthalate and acetyl cellulose.

3,741,972
17-MONOCHLOROACETYL AJMALINE AND PHARMACEUTICALLY ACCEPTABLE SALTS THEREOF
Attilio Bonati, Milan, Italy, assignor to Inverni Della Beffa S.p.A., Milan, Italy
No Drawing. Filed May 8, 1970, Ser. No. 35,880
Claims priority, application Great Britain, May 16, 1969, 25,142/69
Int. Cl. C07d *57/08*
U.S. Cl. 260—293.53 **3 Claims**

The invention provides novel 17-acyl derivatives of ajmaline and salts thereof which have valuable therapeutic properties useful in the treatment of cardiac arrhythmia. The invention also provides a process for producing the 17-acyl compounds referred to, by partial hydrolysis or alcoholysis of the corresponding 17,21-acyl derivatives which may be in the form of the free base or a salt thereof.

3,741,973

OXYGENATED 3-AZABICYCLO[3.3.1]NONANES

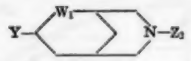
Gunther S. Fonken, Galesburg, Milton E. Herr, Kalamazoo, and Herbert C. Murray, Hickory Corners, Mich., assignors to the Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 666,991, Sept. 11, 1967, now Patent No. 3,556,943, which is a continuation-in-part of abandoned application Ser. No. 453,204, May 4, 1965. This application Oct. 23, 1970, Ser. No. 83,650

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 11 Claims

Oxygenated azabicyclononanes of the formula:



wherein W_1 is selected from the group consisting of the carbonyl, alkylenedioxymethylene, hydroxymethylene and acyloxymethylene, wherein Z_2 is selected from the group consisting of hydrogen,

$—CH_2—R$, $—SO_2—R$, and

in which R is aryl and R_1 is aralkyl and Y is selected from the group consisting of hydrogen, halogen, hydroxy and alkoxy. The compounds of the above formula are particularly valuable as central nervous system stimulants.

3,741,974

SUBSTITUTED TERPHENYLS

Rudolf G. Griot, Basel-Stadt, Switzerland, assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Application Apr. 3, 1969, Ser. No. 813,301, which is a continuation-in-part of application Ser. No. 725,172, Apr. 29, 1968, now Pat. No. 3,622,588, dated Nov. 23, 1971. Divided and this application Mar. 3, 1971, Ser. No. 120,687

Int. Cl. C07d *29/10*

U.S. Cl. 260—293.83 4 Claims

This invention relates to ω-aminoalkoxy substituted terphenyls and N-oxides thereof useful as hypolipidemics, and to processes for preparation of such compounds involving key intermediates which include, for example: (1) substituted tercyclic-ols; or (2) p-(ω - aminoalkoxy)phenyl derivatives of various compounds which are, for example, cyclo-substituted - 2-cyclohexen-1-ols, cyclo-substituted-cyclohexenes or cyclohexen-dienes; or (3) α-(m-terphenyl-4-yloxy) lower aliphatic monocarbocylic acids.

3,741,975

PROCESS FOR THE PRODUCTION OF N-ETHYL-N-(γ-PICOLYL) TROPAMIDE AND INTERMEDIATE THEREFOR

Nobuo Toshioka, Osaka, Shigeo Okumura, Takarazuka, and Itaru Mita, Ashiya, Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,374

Claims priority, application Japan, Jan. 9, 1970, 45/2755

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 AM 2 Claims

The present invention relates to a process for the production of N-ethyl-N-(γ-picolyl)-tropamide and intermediate therefor. The said process is characterized by the steps of:

(a) reacting phenyl acetic acid chloride with N-ethyl-γ-picolylamine to form N - ethyl-N-(γ-picolyl)-phenylacetamide,

(b) formylating said N-ethyl-N-(γ-picolyl)-phenylacetamide with alkyl formate and then

(c) reducing an aldehyde radical of the amide thus obtained.

3,741,976

PROCESS FOR THE PRODUCTION OF PYRIDINE CARBOXYLIC ACIDS FROM LOWER ALYKYL PYRIDINES

August Stocker, Othmar Marti, Theodul Pfammatter, and Gerhart Schreiner, Visp, Switzerland, assignors to Lonza Ltd., Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 871,951, Oct. 28, 1969. This application Dec. 21, 1971, Ser. No. 210,557

The portion of the term of the patent subsequent to Mar. 28, 1989, has been disclaimed

Int. Cl. C07d *31/38*

U.S. Cl. 260—295.5 R 14 Claims

Nicotinic acid and other carboxylic acids having a pyridine nucleus may be prepared by the oxidation of lower alkyl pyridine compounds in the presence of 25 to 600 percent excess nitric acid at temperatures of 180° to 370° C. and at pressures of 20 to 500 atm. The nitric acid concentration of the reaction mixture is adjusted to 10 to 28 percent to precipitate the oxidation product as a crystalline hydronitrate, which is separated from the mixture. The pH of an aqueous solution of the pyridine carboxylic acid hydronitrate is adjusted with the basic starting material to the isoelectric point of the specific pyridine carboxylic acid to precipitate the same. The crystalline precipitation is separated and the mother liquors are combined and recycled as the starting material after adjustment of the concentrations therein.

3,741,977

SUBSTITUTED 3-[4-UREIDOPHENYL]-1,3,4-OXADIAZOL-2-ONES

Roger Boesch, Vitry-Sur-Seine, France, assignor to Rhone-Poulenc S.A., Paris, France

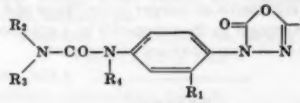
No Drawing. Filed Jan. 14, 1971, Ser. No. 106,568

Claims priority, application France, Jan. 16, 1970, 7,001,573

Int. Cl. C07d *85/54*

U.S. Cl. 260—307 A 11 Claims

The new oxadiazoline derivatives of the formula:



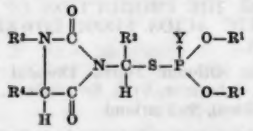
(wherein R represents alkyl or phenyl, or phenyl carrying at least one substituent selected from halogen, alkyl and alkoxy; R_1 represents hydrogen, halogen, alkyl, alkoxy, nitro or trifluoromethyl; R_2 represents hydrogen, alkyl, alkenyl, alkynyl, alkoxy or alkenyloxy; R_3 represents hydrogen or alkyl, and R_4 represents hydrogen or alkyl, the alkyl and alkoxy radicals containing 1 to 4 carbon atoms, and the alkenyl, alkynyl and alkenyloxy radicals containing 2 to 4 carbon atoms) are useful as herbicides against monocotyledons and dicotyledons.

3,741,978
CERTAIN O,O-DI (C_1 AND C_2 ALKYL) PHOSPHORODITHIOATE AND PHOSPHOROTHIOATE ESTERS USEFUL AS INSECTICIDES AND ACARICIDES

Joel D. Jamison, Mountainside, N.J., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 694,883, filed Jan. 2, 1968. This application Apr. 21, 1971, Ser. No. 136,251
Int. Cl. C07d 9/06
U.S. Cl. 260—309.5 5 Claims

Disclosed are compounds of the formula:



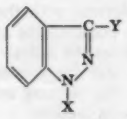
in which Y is O or S, each R^1 is selected from the group consisting of CH_3 or C_2H_5, and R^2, R^3 and R^4 are H or CH_3 with at least one of R^2 and R^3 being CH_3, and the use of these compounds as insecticides and acaricides.

3,741,979
N 1-SUBSTITUTED-3-HALOINDAZOLES AND THEIR USE AS PESTICIDES

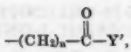
Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 87,615, Nov. 6, 1970. This application May 10, 1971, Ser. No. 141,999
Int. Cl. C07d 49/18
U.S. Cl. 260—310 C 3 Claims

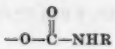
Compounds that have the structural formula



wherein X represents



—SCY_3, or —CH_2—Z; Y represents halogen; Y′ represents halo-lower alkyl or halophenyl; Z represents halogen, —SCN, —CH_2OH, —CH_2Y,



—NR—$N(R)_2$, or —N=$(CH_3)_m$; R represents hydrogen or lower alkyl; *m* represents an integer in the range of 4 to 8; and n represents an integer in the range of 0 to 1 are used to control the growth of various plant and animal pests.

3,741,980
1,1-DISUBSTITUTED-2-ALKYL ISOINDOLINES

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Sept. 22, 1970, Ser. No. 74,467
Int. Cl. C07d 27/48, 27/50
U.S. Cl. 260—326.1 3 Claims

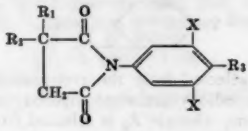
1,1-disubstituted-2-alkyl isoindolines, e.g. 1,1-diphenyl-2-methyl isoindoline, are prepared by treating a corresponding isoindolinone with mild reducing agent. The compounds are useful as analgesics.

3,741,981
N-PHENYLSUCCINIMIDE DERIVATIVES

Akira Fujinami, Ashiya-shi; Toshiaki Ozaki, Toyonaka-shi; Katsuji Nodera, Nishinomiya-shi; Keiichiro Akiba, Takarazuka-shi; Sigeo Yamamoto, Toyonaka-shi; Katsutoshi Tanaka, Takarazuka-shi, and Tadashi Ooishi, Minoo-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

Filed Aug. 1, 1969, Ser. No. 846,931
Claims priority, application Japan, Aug. 12, 1968, 43/57498
Int. Cl. C07d 27/10
U.S. Cl. 260—326.5 FM 5 Claims

Novel N-phenylsuccinimide derivatives preferable as microbicides which are represented by the formula



wherein R_1 and R_2 represent individually a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, a benzyl group or a phenyl group, which may have been substituted by a chlorine atom; R_3 represents a hydrogen atom, a halogen atom or a methyl group; and X represents individually a halogen atom, provided that in case all of R_1, R_2 and R_3 are hydrogen atoms at the same time, X represents other halogen atoms than chlorine atoms. Examples of said derivatives are

N-(3′,5′-dihalogenophenyl)-3-methylsuccinimide,
N-(3′,5′-dihalogenophenyl)-3,3-dimethylsuccinimide,
N-(3,4,5-trihalogenophenyl)succinimide,
N-(3,5-dihalogeno-4-methylphenyl)succinimide,
N-(3,5-dibromophenyl)succinimide,
N-(3′,5′-dihalogenophenyl)-3-phenylsuccinimide,
N-(3′,5′-dihalogenophenyl)-3-(halogenophenyl)succinimide,
N-(3′,5′-dihalogenophenyl)-3-benzylcussinimide, and
N-(3′,5′-dihalogenophenyl)-3-methyl-3-phenylsuccinimide.

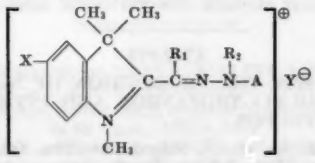
These compounds are prepared by cyclizing corresponding succinic acid monoanilides under dehydration conditions.

3,741,982
NOVEL BASIC, CATIONIC DYESTUFF

Sadao Fujino, Fukuoka-ken, and Yoshio Magara, Kitakyushu, both of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Aug. 26, 1970, Ser. No. 67,250
Claims priority, application Japan, Sept. 3, 1969, 44/69903; Jan. 20, 1970, 45/52031; Feb. 6, 1970, 45/10468
Int. Cl. C07d 27/38
U.S. Cl. 260—326.15 2 Claims

A novel dyestuff having the general formula



(wherein R^1 represents an alkyl or an acyl group, R^2 represents hydrogen, an alkyl or an aryl group, X represents hydrogen or halogen atom or an alkyl or an alkoxy group, A represents benzene or naphthalene nucleus which may contain one or more substituents of an alkyl, an alkoxy, nitro amino, substituted amino, or phenoxy group or halogen atom and Y represents an anion) and which dyestuff can dye polyacrylonitrile and cellulose acetate fiber with excellent fastness to light and heat.

3,741,983
DIBENZOXAZEPINE AND DIBENZOTHIAZEPINE ALKANONITRILES

Harry Louis Yale, and Remesh Petigara, both of New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 13,767, Feb. 24, 1970, Pat. No. 3,702,852. This application Sept. 15, 1971, Ser. No. 180,905
Int. Cl. A61k *27/00*; C07d *93/42, 87/54*
U.S. Cl. 260—327 B 5 Claims

Disclosed herein are dibenzoxazepine and dibenzothiazepine derivatives which are substituted in the 5-position with a carboxyalkylene group. These compounds have been found to stimulate the central nervous system and to produce analgesia.

3,741,984
N-SULFAMOYL-2-THIOPENECARBOXAMIDES

Patrick J. Sheeran, Wilmington, Del., assignor to E. I. du Pont d Nemours and Company, Wilmington, Del.

Filed Aug. 19, 1971, Ser. No. 173,248
Int. Cl. C07d *63/12, 63/14*
U.S. Cl. 260—332.2 C 5 Claims

Certain novel N-sulfamoyl-2-thiopenecarboxamides are effective herbicides especially well suited for the control of nutsedge in the presence of valuable crops. A representative herbicidal compound within the above scope is N-(tert-butylsulfamoyl)-2-thiophenecarboxamide.

3,741,985
PHENYL-BENZODIOXANE DERIVATIVES

John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

Filed Jan. 21, 1971, Ser. No. 108,609
Int. Cl. C07d *15/08*
U.S. Cl. 260—340.2 9 Claims

6-Phenyl-1,3-benzodioxan-4-one derivatives and 6-phenyl-1,3-benzodioxane derivatives and methods of preparing these compounds. The primary methods for preparing the aforementioned benzodioxane-ketone compounds are characterized by the step of treating the corresponding 2-hydroxy-5-phenyl benzoic acid derivative with an alkyl ortho-ester in the presence of an acid catalyst. The primary methods for preparing the 6-phenyl-1,3-benzodioxane derivatives are characterized by the step of treating the corresponding 2-hydroxy-5-phenyl benzyl alcohol with a ketone or aldehyde in the presence of an acid catalyst. The aforementioned phenyl-1,3-benzodioxan-4-one derivatives and 6-phenyl-1,3-benzodioxane derivatives have analgesic activity and thus are useful in the treatment of mammals wherein analgesics are indicated.

3,741,986
PROCESS FOR PREPARING CYCLIC KETALS

Ludwig A. Hartmann, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

Filed Nov. 3, 1969, Ser. No. 873,660
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 6 Claims

Cyclic ketals based upon polyhydric alcohols containing at least three hydroxyl groups and at least three carbon atoms and ketones of the general formula

wherein each R is a halogenated alkyl radical and wherein the carbon atom adjacent to the carbonyl carbon of said ketone is completely halogenated, and processes for producing these cyclic ketals are described.

3,741,987
INTERMEDIATES IN TOTAL SYNTHESIS OF 16-DEHYDROPROGESTERONE

William S. Johnson, Portola Valley, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 788,092, Dec. 30, 1968, Pat. No. 3,598,845. This application Sept. 9, 1970, Ser. No. 70,898
Claims priority, application Canada, Dec. 23, 1969, 070,702
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 6 Claims

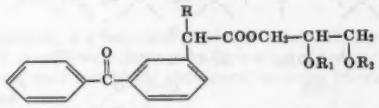
dl-Pregna-4,16-diene-3,20-dione (16-dehydroprogesterone) and dl-17-formylandrosta-4,16-diene-3,20-dione are prepared by a series of reactions starting with 1-methylcyclopropyl methyl ketone.

3,741,988
NOVEL BENZOYLPHENYLACETIC ACID ESTERS

Andre Allais, Les Lilas; Jean Meier, Coeuilly-Champigny, and Jacques Dube, Eaubonne, all of France, assignors to Roussel-Uclaf, Paris, France

Filed Apr. 12, 1971, Ser. No. 133,429
Claims priority, application France, Apr. 15, 1970, 7013579; Sept. 24, 1970, 7034591
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 4 Claims

Racemates and optically active isomers of benzoylphenylacetic acid esters of the formula



I

wherein R is selected from the group consisting of hydrogen and alkyl of one to seven carbon atoms, R_1 and R_2 are hydrogen or taken together are

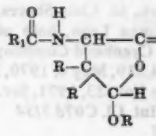
P and Q being alkyl of one to five carbon atoms and the two benzene rings may be optionally substituted with at least one member of the group consisting of chlorine, fluorine, bromine, trifluoromethyl and alkyl and alkoxy and alkylthio of one to seven carbon atoms, intermediates and process for their preparation and their use as analgesics and antiinflammatory agents.

3,741,989
LACTONIC ACETALS

Harold Elmer Zaugg, Lake Forest, Ill., assignor to Abbott Laboratories, Chicago, Ill.

Filed Oct. 27, 1970, Ser. No. 84,464
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 2 Claims

Covers lactonic acetals of the formula



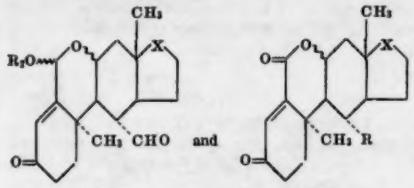
where R is a lower alkyl group and R_1 is an aryl group. Also covers their method of employment as herbicides.

3,741,990
ORGANIC COMPOUNDS AND PROCESSES

Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

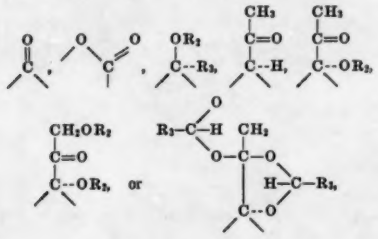
Division of Ser. No. 845,534, July 28, 1969, Pat. No. 3,634,460. This application Jan. 7, 1971, Ser. No. 104,796
Int. Cl. C07d 7/18
U.S. Cl. 260—345.3 10 Claims

This invention relates to novel ring B-secosteroid transformation products, to processes for their preparation and more particularly to compounds embraced by the following formulae:



VIII IX

wherein R is —CHO, —$COOR_1$ or —CH_2OR_2, in which R_1 is hydrogen or methyl and R_2 is hydrogen or acyl; X is



in which R_3 has the meaning given above, R_3 is hydrogen or lower-alkyl and the alkali metal salts of those compounds wherein R is —$COOR_1$ in which R_1 is hydrogen. The compounds of the above formulae are anti-inflammatory agents, antiandrogenic agents and central nervous system stimulants.

3,741,991
DERIVATIVES OF 4A,9B-DIHYDRO-8,9B-DIMETHYLDIBENZOFURAN

Elizabeth Benz Morlock, St. Clair Shores, Mich.; Jay Donald Albright, and Leon Goldman, both of Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 34,519, May 4, 1970, Pat. No. 3,646,060. This application Nov. 23, 1971, Ser. No. 201,572
Int. Cl. C07d 5/34
U.S. Cl. 260—346.2 M 3 Claims

This disclosure describes derivatives of 4a,9b-dihydro-8,9b-dimethyldibenzofuran and of 4a,9b-dihydro-8,9b-dimethyldibenzofuran-3(4H)-one useful as inermediates or as analgetic agents.

3,741,992
DERIVATIVES OF 4A, 9B-DIHYDRO-8,9B-DIMETHYL-DIBENZOFURAN-3(4H)-ONE

Elizabeth Benz Morlock, St. Clair Shores, Mich.; Jay Donald Albright, and Goldman Leon, both of Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 34,519, May 4, 1970, Pat. No. 3,646,060. This application Nov. 23, 1971, Ser. No. 201,575
Int. Cl. C07d 5/34
U.S. Cl. 260—346.2 M 3 Claims

This disclosure describes derivatives of 4a,9b-dihdro-8,9b-dimethyldibenzofuran and of 4a,9b-dihydro-8,9b-dimethyldibenzofuran-3(4H)-one useful as intermediates or as analgetic agents.

3,741,993
MALEIC ANHYDRIDE PROCESS

William G. Hughes, Plainfield, N.J., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Feb. 3, 1970, Ser. No. 8,364
Int. Cl. C07c 57/19
U.S. Cl. 260—346.8 5 Claims

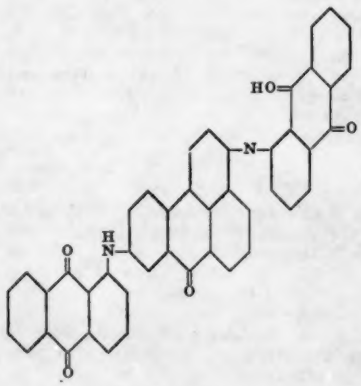
An improved process for the manufacture of maleic anhydride by the oxidation of benzene wherein the crude product stream, after condensation and separation of maleic anhydride, is scrubbed with water to recover an aqueous solution of maleic acid to obtain tail gas containing unreacted benzene, and the resulting tail gas is subjected to a chilled aqueous scrubbing step to effect removal of water-soluble constituents, reduce the amount of water vapor in the tail gas, and lower the temperature of the tail gas. From 0 to 65 percent of the thus treated tail gas may be recycled to the oxidation step to achieve certain processing benefits; while the unrecycled tail gas is scrubbed with a hydrocarbon oil to separate the benzene therefrom and to vent the tail gases, substantially free from benzene, to the atmosphere. The hydrocarbon oil containing the benzene is then stripped with steam to separate and recover the benzene.

3,741,994
VAT DYES

Fumio Fujii; Koji Kurahara; Akitoshi Igata; Nobuyoshi Abe, and Tetsuo Yamamoto, all of Omuta, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Apr. 7, 1970, Ser. No. 26,386
Claims priority, application Japan, Apr. 17, 1969, 44/29347; Sept. 24, 1969, 44/75278
Int. Cl. C09b 15/00
U.S. Cl. 260—364 13 Claims

New brown vat dyes prepared by heating a compound of the formula



in a melt comprising anhydrous aluminum chloride and urea, pyridine, picoline or lutidine or a combination thereof, if desired, in the presence of a halogenating agent. Said dyes are suitable for dyeing various kinds of fibrous material, but as they can not be directly defined by a structural formula, they are defined by the process for preparing them.

3,741,995

ANTHRAQUINONE PIGMENTS

Andre Pugin, Riehen/Basle; Kurt Burdeska, and Ernst Model, both of Basle, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

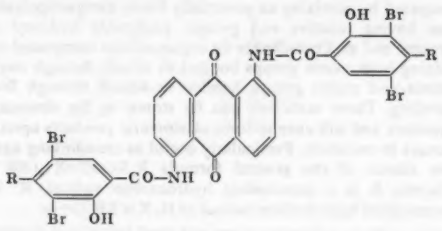
Filed Mar. 17, 1971, Ser. No. 125,394

Claims priority, application Switzerland, Apr. 3, 1970, 4934/70The portion of the term of this patent subsequent to Oct. 31, 1989, has been disclaimed.

Int. Cl. C09b *1/42*

U.S. Cl. 260—377 4 Claims

Compounds of the formula



wherein R is methyl, methoxy or chlorine.

3,741,996

1α-HYDROXYCHOLECALCIFEROL

Hector F. DeLuca, Madison; Heinrich K. Schnoes, Waunakee; Michael F. Holick, and Erich J. Semmler, both of Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 2, 1971, Ser. No. 204,305

Int. Cl. C07c *171/10, 169/60*

U.S. Cl. 260—397.2 2 Claims

1α-hydroxycholecalciferol and method for preparing the same. The compound is characterized by antirachitic and other vitamin D-like activity and finds application in situations where vitamin D is now being used.

3,741,997

PROCESS FOR THE PREPARATION OF PREGNANE DERIVATIVES

Hans-Detlef Berndt, and Rudolf Wiechert, both of Berlin, Germany, assignors to Schering, A.G., Berlin, Germany

Filed May 4, 1971, Ser. No. 140,262

Claims priority, application Germany, May 5, 1970, P 20 23 122.5

Int. Cl. C07c *167/00, 169/00*

U.S. Cl. 260—397.4 30 Claims

17β-Hydroxy-17α-ethynyl steroids are converted to 17-ethers and 17-esters of 17α-hydroxy-20-keto-pregnane steroids by forming a 17-sulfite ester of the 17β-hydroxy group with thionyl chloride in the presence of base and then reacting the sulfite ester with an alcohol or carboxylic acid in the presence of an Hg^{++} salt.

3,741,998

PRODUCTION OF AMMONIUM BETAINES

Harry Distler, Ludwigshafen, and Rudi Widder, Eppelheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Dec. 8, 1970, Ser. No. 96,270

Claims priority, application Germany, Dec. 18, 1969, P 19 63 399.9

Int. Cl. C07c *143/86*

U.S. Cl. 260—401 6 Claims

The production of ammonium betaines by reaction of adducts of an oxide of sulfur and an amine with an aziridine, and the new ammonium betaines themselves. The new compounds obtainable according to the process of the invention are surfactants, particularly detergents and assistants in the textile field, softeners, washing aftertreatment agents, germicides, and valuable starting materials for the production of detergents, cleaning agents, detergents, wetting agents, textile assistants, dishwashing agents, shampoos, emulsifiers, dispersing agents, flotation aids, softeners, disinfectants and thickeners.

3,741,999

N-SUBSTITUTED AMIDES OF NATURAL FATTY ACIDS

Takashi Seki, Toyonaka; Katsuyuki Toki, Nishinomiya; Hiroshi Nakatani, Toyonaka; Yoshio Suzuki, Amagasaki; Hideaki Fukushima, Takatsuki, and Yoshio Nawashiro, Moriguchi, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Higashi-ku, Osaka, Japan

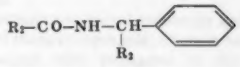
Continuation-in-part of Ser. No. 450,534, April 23, 1965, Pat. No. 3,551,462. This application Sept. 10, 1970, Ser. No. 71,205

Claims priority, application Japan, Apr. 28, 1964, 39/24061; May 20, 1964, 39/28284; June 8, 1964, 39/32324; Aug. 28, 1964, 39/49073; Sept. 1, 1964, 39/49812; Sept. 5, 1964, 39/50947

Int. Cl. C09f *7/00*

U.S. Cl. 260—404 5 Claims

Novel N-α-(C_1-C_4)alkyl-benzyl natural fatty acid amides of the formula



wherein R_1 is a fatty acid residue of a naturally occurring oil such as safflower oil etc., and R_2 is alkyl of 1–4 carbon atoms having excellent blood cholesterol lowering effects are provided.

3,742,000

IMIDOETHER AND AMIDINE DERIVATIVES OF SUBSTITUTED FATTY AMIDES

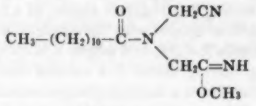
Patricia M. Scanlon, Arlington, Mass., and Elwyn R. Young, Nashua, N.H., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 830,091, June 3, 1969, Pat. No. 3,641,103. This application Mar. 10, 1971, Ser. No. 128,613

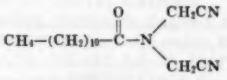
Int. Cl. C09f *4/00*

U.S. Cl. 260—404.5 2 Claims

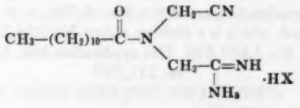
An imidoether having the formula



is prepared by reacting



with methanol in the presence of a sodium methoxide catalyst, and an amidine salt having the formula



is prepared by reacting the imidoether with ammonium chloride or ammonium bromide in the presence of methanol. The imidoethers are used to prepare the amidine salts, which in turn are useful as stabilizers for polyesters.

3,742,001

RENDERING PROCESS

Ezra Levin, Champaign, Ill., assignor to VioBin Corporation, Champaign, Ill.

Continuation-in-part of Ser. No. 408,231, Nov. 2, 1964, Pat. No. 3,538,973. This application June 29, 1970, Ser. No. 50,828

Int. Cl. C11b *1/10*

U.S. Cl. 260—412.8 22 Claims

The process reduces the water content of a biological tissue, in particle form and retaining a fat content by coagulating the particles, and thereafter contacting the particles with a gas at an elevated temperature and having a water vapor pressure, at the temperature to which the gas raises the biological tissue, that is less than the vapor pressure of water contained in the tissue at that temperature. Subsequently, the at least partially dehydrated biological particles are extracted. In one embodiment of the invention the extraction is accomplished by warm polar type fat solvent, and in another embodiment of the invention partially dehydrated particles are introducd into a water-immiscible, fat, solvent, and by azeotropic distillation of water and solvent the water content is further reduced and by extraction the fat content is reduced. The process is preferably performed in a continuous manner by utilizing specific apparatus. The dehydrated, defatted product is treated for solvent removal.

3,742,002

IRON CHELATES USEFUL FOR SUPPLYING IRON TO PLANTS GROWING IN CALCAREOUS SOIL

John L. Ohlson, Bedford; Patricia M. Scanlon, Arlington, both of Mass., and Roger R. Gaudette, Hudson, N.H., assignors to W. R. Grace & Co., New York, N.Y.

Filed June 14, 1971, Ser. No. 153,038

Int. Cl. C07f *15/02*; C07c *143/64*, *101/72*

U.S. Cl. 260—439 R 18 Claims

Iron chelates useful for supplying iron to plants growing in calcareous iron deficient soil are prepared by admixing an iron(II) or iron(III) compound with a compound formed by reacting a slat of an α-amino acid having the formula $H_2NC(Z)HCOOH$ wherein Z is hydrogen, a lower alkyl group, a phenyl group, an aralkyl group having 7–10 carbon atoms,an alkaryl group having 7–10 carbon atoms, or a cycloalkyl group having 3–8 carbon atoms with formaldehyde and a phenol having the formula $X\text{-}C_6H_4\text{-}OH$ where X is $-SO_3M$, -COOM, or an alkyl group having about 1–4 carbon atoms, and M is a member selected from a second group consisting of an alkali metal cation, $HN^+ \equiv (CH_2CH_2OH)_3$, and A, wherein A is one half of an alkaline earth metal cation.

3,742,003

CYCLODISILAZANES

Richard Paul Bush, Penarth; Norman Cecil Lloyd, Cardiff, and Christopher Arthur Pearce, Cowbridge, all of Wales, assignors to Dow Corning Limited, London, England

Continuation-in-part of Ser. No. 68,786, Sept. 1, 1970, abandoned, which is a division of Ser. No. 734,243, June 4, 1968, Pat. No. 3,607,895. This application Dec. 23, 1971, Ser. No. 211,777

Int. Cl. C07f *7/10*; C07d *109/04*

U.S. Cl. 260—448.2 N 3 Claims

Novel organosilicon compositions are prepared which contain silicon to nitrogen bonds which are attached to functional atoms and radicals. The novel compounds are used to prepare conventional siloxanes.

3,742,004

ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER STOCKS

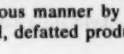
Siegfried Nitzsche; Wolfgang Kaiser; Ernst Wohlfarth, and Paul Hittmair, all of Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

Division of Ser. No. 63,608, Aug. 13, 1970, abandoned. This application Jan. 28, 1972, Ser. No. 221,790

Int. Cl. C07f *7/10*

U.S. Cl. 260—448.2 N 2 Claims

A room-temperature vulcanizable silicone rubber stock is prepared by admixing an essentially linear diorganopolysiloxane having reactive end groups, preferably hydroxyl end groups, and as a crosslinker an organosilicon compound containing both oxime groups bonded to silicon through oxygen atoms and amino groups bonded to silicon through Si—N bonding. These materials can be stored in the absence of moisture and will cure to form elastomeric products upon exposure to moisture. Particularly useful as crosslinking agents are silanes of the general formula $R_aSi(ON{=}X)_b(NR'R)_c$ wherein R is a monovalent hydrocarbon radical, R′ is a monovalent hydrocarbon radical or H, X is RR′C= or



where R^2 is a divalent hydrocarbon radical, *a* is o or 1, *b* and *c* have an average value of at least 0.5, $b+c$ is 3 or 4 and $a=b+c$ is 4.

3,742,005

HERBICIDAL THIOLCARBAMATES

Harry Tilles, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 888,821, Dec. 29, 1969, abandoned. This application Dec. 14, 1970, Ser. No. 98,075

Int. Cl. C07c *155/08*

U.S. Cl. 260—455 A 1 Claim

Novel N,N-dialkylthiocarbamates, in hich the N-bonded alkyl radicals are different, are disclosed. The compounds are useful as herbicides.

3,742,006

A POLYMERCAPTAN COMPOSITION

Richard C. Doss, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 1, 1970, Ser. No. 68,770

Int. Cl. C01c *155/08*

U.S. Cl. 260—455 A 1 Claim

A polymercaptan epoxy resin hardener composition and a process for curing epoxy resins through the use of said composition wherein the curing process yields an epoxy adhesive possessing excellent high temperature stability.

3,742,007

N-ALKYL-N-BI-, TRI- OR TETRACYCLOALKYL THIOCARBAMATES

Hans Osieka, Ludwigshafen; Hans Kiefer, Wachenheim, and Adolf Fischer, Mutterstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Oct. 19, 1970, Ser. No. 82,145

Claims priority, application Germany, Oct. 23, 1969, P 19 53 262.8

Int. Cl. C07c *155/02*, *155/08*

U.S. Cl. 260—455 A 9 Claims

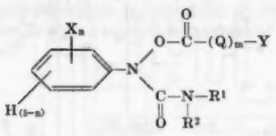
New and valuable substituted thiolcarbamates having a good herbicidal action and a process for controlling the growth of unwanted plants with these compounds.

3,742,008
N-CYCLOALKYLTHIOCARBONYLOXY-SUBSTITUTED N-PHENYLUREAS

John Krenzer, Oak Park, and S. B. Richter, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 781,584, Dec. 5, 1968, Pat. No. 3,637,795. This application June 26, 1971, Ser. No. 147,175
Int. Cl. C07c *154/00*
U.S. Cl. 260—455 B 5 Claims

This invention discloses new chemical compounds of the formula

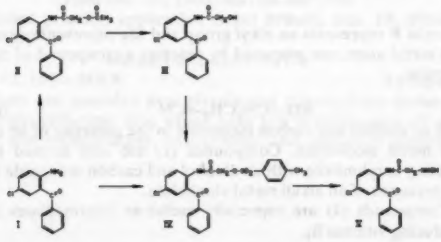


wherein X is selected from the group consisting of alkyl, alkenyl, halogen, haloalkyl, alkoxy, alkylthio, nitro and dialkylamino; *n* is an integer from 0 to 5; R^1 and R^2 are independently selected from the group consisting of hydrogen and alkyl; Q is selected from the group consisting of oxygen, sulfur and alkylene; *m* is an integer from 0 to 1; and Y is cycloalkyl, optionally substituted with halogen or alkyl. This invention further discloses new herbicidal compositions comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to weeds, a compound of the above description.

3,742,009
2-HYDROXYACETAMIDOBENZOPHENONE ESTERS

Stanley C. Bell, Hampton House, Penn Valley, Pa.

Continuation-in-part of Ser. No. 365,773, May 7, 1964, abandoned, which is a continuation-in-part of Ser. No. 301,873, Aug. 13, 1963, abandoned. This application June 18, 1967, Ser. No. 639,346
Int. Cl. C07c *143/68*
U.S. Cl. 260—456 A 5 Claims



2-Arylsulfonoxyacetamidobenzophenones are prepared in three steps from 2-aminobenzophenones by 1) reacting the 2-aminobenzophenone with an acetylglycolyl halide, 2) hydrolyzing the product to remove the acetyl group, and 3) reacting the so-formed 2-hydroxyacetamidobenzophenone with an arylsulfonyl halide. Alternatively 2-arylsulfonoxyacetamidobenzophenones are prepared in one step from 2-aminobenzophenones by reacting the 2-aminobenzophenone with a 2-arylsulfonoxyacetyl halide. The so-obtained 2-arylsulfonoxyacetamidobenzophenones can be converted to 2-hydroxyaminoacetamidobenzophenones, which are valuable intermediates for the preparation of 1,3-dihydro-2H-1,4-benzodiazepin-2-ones having anti-convulsant, sedative and muscle-relaxant activity.

3,742,010
FLUORINATED CARBONATES

Donald E. Hardies, Wadsworth, and Jay K. Rinehart, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 28, 1970, Ser. No. 76,275
Int. Cl. C07c *79/28*; A01n *9/20*
U.S. Cl. 260—463 34 Claims

Fluorinated carbonates are described which are useful as miticides. These carbonates often possess herbicidal, insecticidal, and/or fungicidal properties. Examples of the fluorinated carbonates are 2′, 4′-dinitro-6′-secbutylphenyl-2,2,2-trifluoroethyl carbonate; 2′, 4′-dinitro-6′-sec-butylphenyl-2,2,3,3-tetrafluoropropyl carbonate and 2′, 4′-dinitro-6′-cyclohexylphenyl 2,2,3,3-tetrafluoropropyl carbonate.

3,742,011
TRINITROPHENYL CHLOROFORMATE AND CARBONATE AND A PROCESS FOR PREPARING SAME

Jean-Paul Konrat, Vert-le-Petie, and Louis Le Roux, Sorgues, both of France, assignors to ETAT Francais Delegation Ministerielle pour L'Armement, Paris, France

Filed Mar. 1, 1971, Ser. No. 119,937
Int. Cl. C07c *79/30*
U.S. Cl. 260—463 9 Claims

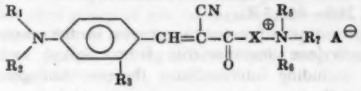
Picryl chloroformate and picryl carbonate and a process for the preparation of these compounds, wherein anhydrous silver picrate is contacted with phosgene in the presence of acetonitrile, at a temperature in the range of −25° to 50° C, preferably, about 0° C.

3,742,012
QUATERNARY STYRYL DYESTUFFS

Donald Lee Bauman, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

Filed Jan. 13, 1972, Ser. No. 217,934
Int. Cl. C07c *121/70*
U.S. Cl. 260—465 D 4 Claims

Green-yellow dyes having the structure



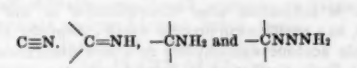
wherein each of R_1 and R_2 is lower alkyl or cyanoethyl, R_3 is H, methyl, methoxy or chloro, X is -O-alkylene or -NH-alkylene, R_5 is lower alkyl, R_6 is lower alkyl or cyclohexyl, R_7 is lower alkyl or benzyl and $A^{\ominus}$ is an anion.

3,742,013
FLUORINATED COMPOUNDS CONTAINING FUNCTIONAL GROUPS

Harold Crosbie Fielding, Northwich, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 656,682, July 28, 1967, Pat. No. 3,502,726. This application July 31, 1969, Ser. No. 870,788
Claims priority, application Great Britain, Aug. 24, 1967, 36,862/67
Int. Cl. C07c *121/02*, *121/42*
U.S. Cl. 260—465.5 R 4 Claims

Derivatives of oligomers of tetrafluoroethylene and of hexafluoropropene, contain one or more



groups attached to the oligomer residue. Derivatives containing the first three of these groups are made by contacting an oligomer with anhydrous gaseous ammonia in a solvent medi-

um or by heating with a concentrated aqueous solution of ammonia. Those containing $MHNH_2$ groups are made by reactions between oligomer and hydrazine. The derivatives may be converted into highly fluorinated nitriles which can be reduced to amines and quaternised with alkyl halides to yield cationic surfactants.

3,742,014
PREPARATION OF BENZONITRILES

Eugene M. Grivsky, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., a Corp. of North Carolina and Wellcome Foundation Ltd., London, England

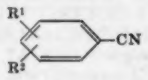
Filed May 28, 1971, Ser. No. 148,172

Claims priority, application Great Britain, May 29, 1970, 25,984/70

Int. Cl. C07c *121/02, 121/52*

U.S. Cl. 260—465 B **37 Claims**

A method of preparing a benzonitrile of the formula



wherein R^1 is a substituent nitro group and R^2 is a substituent halogen atom, which comprises reacting an R^1, R^2-benzoyl chloride with an alkanesulphonyltrichlorophosphazene at a temperature of between 150° C. and 190° C. The benzonitrile products are useful as intermediates in the preparation of amidino ureas having anti-malarial activity.

3,742,015
PROCESS FOR THE PREPARATION OF AMINOMETHYLENE MALONONITRILE

Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 42,528, June 1, 1970, Pat. No. 3,655,716, which is a division of Ser. No. 719,834, April 9, 1968, Pat. No. 3,542,848. This application Nov. 11, 1971, Ser. No. 197,968

Int. Cl. C07c *121/42*

U.S. Cl. 260—465.5 R **2 Claims**

This invention is directed to a process for the preparation of aminomethylene malononitrile from dialkyl aminoacrylonitrile including intermediates therein. Aminomethylene malononitrile is a known compound which is a valuable intermediate in the synthesis of thiamine.

3,742,016
PRODUCTION AND PURIFICATION OF ACETONE CYANOHYDRIN BY MULTIPLE STAGE DISTILLATION AND CONDENSATION STEPS

Yasunobu Iida; Hideki Kaio, both of Yokohama; Masashi Ikeda, Tokyo-to, and Yasumasa Yamamoto, Yokohama, all of Japan, assignors to Nitto Kagaku Kogyo Kabushiki Kaisha (a/k/a Nitto Chemical Industry Co., Ltd.) and Mitsubishi Rayon Kabushiki Kaisha (a/k/a Mitsubishi Rayon Co., Ltd.), Tokyo-to, Japan, part interest to each

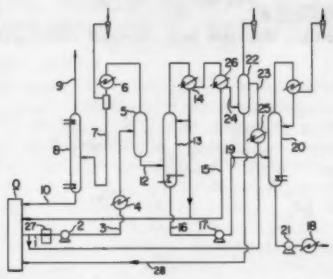
Filed Oct. 20, 1970, Ser. No. 82,321

Claims priority, application Japan, Oct. 21, 1969, 44/84029

Int. Cl. C07c *121/36*

U.S. Cl. 260—465.6 **7 Claims**

Crude acetone cyanohydrin synthesized in a synthesis step from hydrocyanic acid and acetone in the presence of an alkaline catalyst and containing unreacted hydrocyanic acid and acetone is subjected, after neutralization of the alkaline catalyst, to a purification process which comprises: subjecting the crude acetone cyanohydrin to a first distillation step in which a flash distillation is carried out at a relative mild vacuum thereby to remove a first distillate composed principally of hydrocyanic acid and impurities of lower boiling points; subjecting substances not distilled in the first flash distillation to a second distillation a relatively higher temperature and a mild vacuum thereby to remove a second distillate composed principally of acetone; and recovering the substances not distilled in the second distillation as a purified acetone cyanohydrin. This purification process is characterized in that: the hydrocyanic acid and any accompanying



acetone are recovered from the first distillate and are recirculated to the synthesis step; at least one portion of the acetone of the second distillate is caused to contact crude acetone cyanohydrin containing the alkaline catalyst thereby to cause absorption thereof; and the resulting absorption liquid is recirculated to the synthesis step.

3,742,017
METHOD FOR THE PRODUCTION OF FORMYLNITRILE DERIVATIVES

Yutaka Miyashiro, and Yasuo Ando, both of Nishinomiya, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

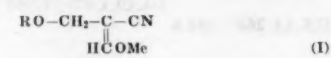
Filed Feb. 17, 1971, Ser. No. 116,269

Claims priority, application Japan, Feb. 24, 1970, 45/15809

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.6 **7 Claims**

Formylnitrile derivatives of the formula



(I)

wherein R represents an alkyl group and Me represents an alkali metal atom, are prepared by reacting a compound of the formula

(II)

with an alcohol and carbon monoxide in the presence of an alkali metal alcoholate. Compounds (I) are also formed by reacting acrylonitrile with an alcohol and carbon monoxide in the presence of an alkali metal alcoholate.

Compounds (I) are especially useful as intermediates in producing vitamin B_1.

3,742,018
CYANOACRYLATE ADHESIVE COMPOSITION

Denis Joseph O'Sullivan, Dublin, Ireland, assignor to Loctite (Ireland) Limited, Dublin, Ireland

Continuation-in-part of Ser. No. 771,612, Oct. 29, 1968. This application Apr. 14, 1970, Ser. No. 28,543

Claims priority, application Ireland, Apr. 15, 1969, 501/69; Nov. 10, 1967, 1347/67; Jan. 5, 1968, 17/68

Int. Cl. C07c *121/30, 121/48, 121/52*

U.S. Cl. 260—465.4 **10 Claims**

Rapidly curing adhesive compositions are composed of monomeric esters of 2-cyanoacrylic acid (CH_2=$C(CN)CO_2R$), stabilized by an organic sultone (—$CS(0_2)0C$—).

3,742,019

PRODUCTION OF CHLORINATED COTELOMERS

David Vofsi, and Meir Asscher, both of Rehovot, Israel, assignors to Products Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

Filed Apr. 1, 1969, Ser. No. 812,296
Claims priority, application Israel, Apr. 1, 1968, 29,736
Int. Cl. C07c *121/02, 121/28*
U.S. Cl. 260—465.7 9 Claims

The production of chlorinated cotelomers in which a homogeneous solution of mixtures of vinyl chloride and vinylidene chloride or a binary or tertiary mixture of vinyl chloride and/or vinylidene chloride with a non-chlorinated vinyl monomer are polymerized in the presence of chloroform or carbon tetrachloride with a catalyst in the form of a ferrous or ferric compound.

3,742,020

PROCESS FOR THE PRODUCTION OF MALONIC ACID DINITRILE AND PURIFICATION THEREOF

Urs Arni, Brig; Adriano Faucci, and August Stocker, both of Visp, all of Switzerland, assignors to Lonza, Ltd., Gampel (Valais) Basel, Switzerland

Division of Ser. No. 822,724, May 7, 1969, Pat. No. 3,655,721. This application Apr. 26, 1971, Ser. No. 137,593
Claims priority, application Switzerland, May 9, 1968, 6964/68; June 18, 1968, 9059/68; June 24, 1968, 9383/68
Int. Cl. C07c *121/22*
U.S. Cl. 260—465.8 R 7 Claims

Malonic acid dinitrile is prepared by reacting acetonitrile and cyanogen chloride in the gaseous phase at temperatures from 740° to 780°C. Temperatures from 750° to 760°C. with molar ratios of 1:1 to 1:5 of cyanogen chloride to acetonitrile are preferred. The crude mixture containing malonic acid dinitrile may be purified by conversion of the principal impurities to easily separable compounds by a Diels-Alder or selective hydrogenation reaction.

3,742,021

NEW DERIVATIVES OF GLYCYRRHETINIC ACID

John Cameron Turner, Kent, and Michael Christopher Sleep, London, both of England, assignors to Biorex Laboratories Limited, London, England, by said turner

Filed Dec. 23, 1969, Ser. No. 887,778
Claims priority, application Great Britain, Jan. 17, 1969, 2,847/69
Int. Cl. C07c *61/36, 61/74*
U.S. Cl. 260—468.5 3 Claims

There are provided new glycols and chlorhydrins derived from glycyrrhetinic acid which have low toxicities as well as good anti-inflammatory, anti-arthritic and anti-ulcer properties.

3,742,022

CARBAMATE ESTERS OF PHYSIOLOGICALLY ACTIVE PHENENTHYLAMINES

Anthony J. Verbiscar, 160 E. Montecito Avenue, Sierra Madre, Calif.

Continuation-in-part of Ser. No. 636,650, May 8, 1967, Pat. No. 3,600,427, which is a continuation-in-part of Ser. No. 338,289, Jan. 17, 1964, abandoned. This application Mar. 8, 1971, Ser. No. 122,140
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C 10 Claims

Carbamate esters of physiologically active phenethylamines (e.g., amphetamine and ephedrine) are disclosed. These carbamates have ester moieties which are easily hydrolyzed in body fluids to release the phenethylamines at selected sites within the body.

3,742,023

NOVEL 1-SUBSTITUTED PHENOXY-2-HYDROXY-3-ISOPROPYLAMINO-PROPANES

Herbert Koppe, Ingelheim; Albrecht Engelhardt, Mainz; Gerhard Ludwig, Wedel, and Karl Zeile, Ingelheim, all of Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

Division of Ser. No. 619,191, Feb. 28, 1967, Pat. No. 3,637,852, which is a continuation-in-part of Ser. No. 391,012, Aug. 20, 1964, abandoned. This application Feb. 22, 1971, Ser. No. 117,772
Claims priority, application Germany, Feb. 6, 1967, B 91070; Aug. 26, 1963, B 73262
Int. Cl. C07c *101/42*
U.S. Cl. 260—471 R 6 Claims

Novel 1-phenoxy-2-hydroxy-3-isopropylamino-propane and acid addition salts thereof having bradycardia activity and N-isopropyl-nor-adrenaline activity and their preparation.

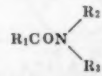
3,742,024

METHOD OF ESTERIFICATION

Tetsuo Ukai, and Toshiyuki Mizumoto, both of Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed July 15, 1971, Ser. No. 163,063
Claims priority, application Japan, July 24, 1970, 45/64766
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 P 4 Claims

The present invention relates to a method for esterifying an aromatic acid component consisting primarily of terephthalic acid with a glycol component consisting primarily of ethylene glycol which comprises conducting the esterification in the presence of an alkyl amide having a boiling point lower than that of ethylene glycol and represented by the following general formula:



wherein R_1 is a hydrogen atom or an alkyl group, each of R_2 and R_3 is an alkyl group or one of these groups is an alkyl group and the other is a hydrogen atom, or R_2 and R_3 are polymethylene groups forming a heterocyclic ring together with the nitrogen atom.

3,742,025

STABILIZATION OF THERMALLY UNSTABLE DMT BY CERTAIN PHOSPHONIC ACID DERIVATIVES

Hiroshi Mori; Michio Yamamoto, and Koshi Namie, all of Matsuyama, Japan, assignors to Teijin Hercules Chemical Company Limited, Tokyo, Japan

Filed Jan. 8, 1971, Ser. No. 105,070
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 B 8 Claims

Disclosed is the stabilization of thermally unstable dimethyl terephthalate with a stabilizing quantity of material selected from the group consisting of P-aryl and P-aralkyl substituted phosphonic acids, esters and alkali metal salts.

3,742,026

STABILIZATION OF THERMALLY UNSTABLE DMT WITH BHET

Hiroshi Mori; Michio Yamamoto; Koshi Namie, and Teruhisa Kimoto, all of Maisuyama, Japan, assignors to Teijin Hercules Chemical Company Limited, Tokyo, Japan

Filed Jan. 8, 1971, Ser. No. 105,071
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 B 3 Claims

Disclosed is the stabilization of thermally unstable dimethyl terephthalate with a stabilizing quantity of bis(β-hydroxyethyl)terephthalate.

3,742,027

STABILIZATION OF THERMALLY UNSTABLE DMT BY MIXTURE OF C -C ALKANOL MATERIAL AND CERTAIN COBALT SALT MATERIAL

Hiroshi Mori; Michio Yamamoto; Chitoshi Kondo; Teruhisa Kimoto; Satoshi Takahashi, and Toshiyuki Ochi, all of Matsuyama City, Japan, assignors to Teijin Hercules Chemical Company Limited, Tokyo, Japan

Filed Jan. 8, 1971, Ser. No. 105,072
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 B 10 Claims

Disclosed is the stabilization of thermally unstable dimethyl terephthalate (DMT) with a stabilizing quantity of the mixture consisting essentially of C_1—C_4 alkanol material and cobalt salt material selected from the group consisting of cobalt halides, aromatic carboxylic acid salts of cobalt, and aliphatic carboxylic acid salts of cobalt, the weight ratio of said cobalt salt material to said alkanol material being in the range from about 1:500,000 to about 1:2. The quantity of the mixture added to the DMT is generally from about five hundred parts to about ten parts by weight per million parts by weight of the DMT, and preferably from about one hundred to about thirty parts by weight per million parts by weight of the DMT.

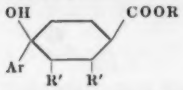
3,742,028

ARYL SUBSTITUTED-HYDROXY SUBSTITUTED CYCLOHEXENECARBOXYLIC ACIDS AND ESTERS

George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 662,295, Aug. 22, 1967. This application Sept. 23, 1970, Ser. No. 74,857
Int. Cl. C07c *65/14*
U.S. Cl. 260—479 R 4 Claims

Hydroxyacids and hydroxyesters of the formula:



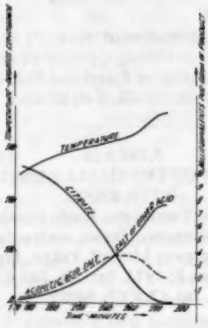
wherein R is hydrogen or lower alkyl, R′ is lower alkyl and Ar is substituted aryl, are intermediates in the preparation of 2-lower alkyl-3-lower alkyl-4-aryl-cyclohexenecarboxylic acids and esters which are active agents for the suppression of animal reproduction.

3,742,029

UNSATURATED CARBOXYLIC SALT MATERIALS AND DERIVATIVES THEREOF

Fred Smeets, Tienen, Belgium, assignor to N.V. "La Citrique Belge," Pastorijstraat, Tienen, Belgium

Division of Ser. No. 563,816, July 8, 1966, Pat. No. 3,586,715. This application Nov. 24, 1969, Ser. No. 877,590
Int. Cl. C07c *143/12*
U.S. Cl. 260—481 R 18 Claims



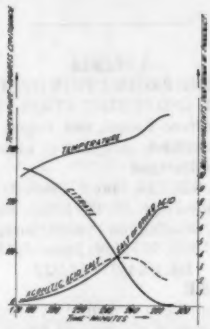
This invention relates to polycarboxylic acids having more than three carboxylic acid groups and alkali and alkaline earth metal salts thereof prepared by the pyrolysis of alkaline earth metal salts of citric acid. The compounds are intermediates for sulfo-acid. materials used in preparing surface active agents, ion exchange materials and detergents.

3,742,030

UNSATURATED CARBOXYLIC SALT MATERIALS AND DERIVATIVES THEREOF

Fred Smeets, Tienen, Belgium, assignor to N. V. "La Citrique Belge", Pastorijstraat, Tienen, Belgium

Division of Ser. No. 563,816, July 8, 1966, Pat. No. 3,586,715. This application Nov. 24, 1969, Ser. No. 877,600
Int. Cl. C07c *143/12*
U.S. Cl. 260—481 R 7 Claims



This invention relates to polycarboxylic acids having more than three carboxylic acid groups and alkali and alkaline earth metal salts thereof prepared by the pyrolysis of alkaline earth metal salts of citric acid. The compounds are intermediates for sulfo-acid materials used in preparing surface active agents, ion exchange materials and detergents.

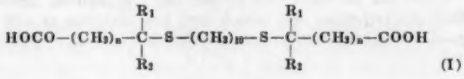
3,742,031

NOVEL NORMOLIPEMIANT AGENTS

Louis Lafon, Paris, France, assignor to Societe Anonyme dite: Orsymonde, Paris, France

Filed Aug. 3, 1970, Ser. No. 60,730
Claims priority, application Great Britain, Aug. 8, 1969, 39,892/69
Int. Cl. C07c *149/20*
U.S. Cl. 260—481 R 4 Claims

They are constituted by compounds of the formula:



(I)

in which R_1 and R_2 are the same or different and each represents a hydrogen atom or an alkyl radical having one or two carbon atoms, and *n* is 0, 1 or 2, as well as their ester, amide and nitrile derivatives and their non-toxic salts.

3,742,032

N,N′ALKYLENEBIS[β-(ALKYL-CARBOXYALKYLTHIO)PROPIONAMIDES

Warren L. Beears, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Division of Ser. No. 873,651, Nov. 3, 1969, abandoned. This application Apr. 23, 1971, Ser. No. 137,052
Int. Cl. C07c *149/20*
U.S. Cl. 260—481 R 5 Claims

Alkylcarboxyalkylthio propionamides are effective stabilizers for polyolefins. N,N′-methylene-bis[β-(alkyl-carboxyalkylthio)propionamides] and hexahydro-1,3,5-tris[β-(alkyl-carboxyalkylthio)propionyl]-s-triszines are particularly useful

stabilizers for polyethylene and polypropylene. The present alkylcarboxyalkylthio propionamides behave synergistically in combination with phenolic stabilizers derived from isocyanurates and 1,3,5-triazines.

3,742,033

PROCESS FOR THE PREPARATION OF MONO-AND POLYIMINES WITH ELECTROPHILIC DOUBLE-BOND SYSTEMS

Manfred Hajek, and Kuno Wagner, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 20, 1969, Ser. No. 878,558

Claims priority, application Germany, Nov. 29, 1969, P 18 11 657.9

Int. Cl. C07c *101/44*

U.S. Cl. 260—471 R **14 Claims**

Imines substituted in the α-position are obtained by reacting mono- or polyimines (ket- and aldimines) with an electrophilic olefin (i.e., acrylic and metacrylic acid derivatives) at a temperature between 10° and 150° C, optionally under pressure and optionally in the presence of an inert solvent.

The imines modified by the process of the invention have many possible uses and represent valuable intermediates for many organic syntheses.

The new compounds obtainable according to the process can be used in the preparation of elastic moulding masses.

3,742,034

PROCESS FOR THE PURIFICATION OF L-SERINE

Balthasar Hegedus, Binningen, and Anna Krasso, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 10, 1971, Ser. No. 114,368

Int. Cl. C07c *101/18*

U.S. Cl. 260—482 R **6 Claims**

A process for separating L-serine methyl ester hydrochloride and L-serine, respectively, in pure form from a mixture of amino acids containing predominantly L-threonine in addition to L-serine is disclosed. The process is carried out by forming the hydrochloride salt of the methyl ester of the amino acids and then selectively crystallizing and recovering the L-serine methyl ester hydrochloride from ethyl acetate and, if desired, hydrolyzing the thus obtained L-serine ester hydrochloride to L-serine.

3,742,035

METHOD FOR PREPARATION OF URETHANATED HYDROXYALKANE SULFONATES

Iwao Tamai, and Kenji Yokoi, both of Ishikawa-shi, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,638

Claims priority, application Japan, Dec. 26, 1970, 45/129627

Int. Cl. C07c *125/04*

U.S. Cl. 260—482 C **4 Claims**

Alkane sulfonate carbamates are obtained as the result of reaction conducted between hydroxyalkane sulfonate and urea within the aromatic hydrocarbon solvent.

3,742,036

O-(N-ALKYL CARBAMOYL)CARBALKOXY-CHLOROFORMALDOXIME AND PROCESS FOR THE PREPARATION THEREOF

Jacques Perronnet, Paris, and Jean-Pierre Demoute, Montreuil sous Bois, both of France, assignors to Roussel-Uclaf, Paris, France

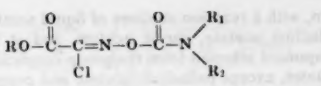
Filed July 6, 1971, Ser. No. 160,215

Claims priority, application France, July 10, 1970, 7025738

Int. Cl. C07c *131/00*

U.S. Cl. 260—482 R **3 Claims**

Substituted oximes of the formula



I

wherein R and R_1 may be different and are lower alkyl and R_2 is selected from the group consisting of hydrogen and lower alkyl having excellent pesticidal properties and their preparation.

3,742,037

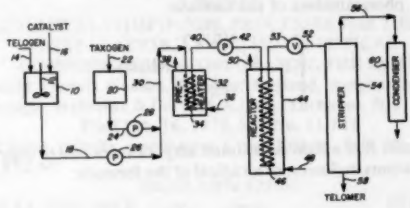
TELOMERS OF VINYL ALKANOATES AND A METHYL SUBSTITUTED BENZENE COMPOUND

Charles E. Blades, Spring Row, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed July 31, 1970, Ser. No. 64,934

Int. Cl. C07c *69/20, 69/32*

U.S. Cl. 260—488 CD **3 Claims**



A telomer of a vinyl ester and a benzene containing at least two methyl groups has utility as a plasticizer for nitrocellulose; the telomer is suitably produced by reacting the vinyl ester with the substituted benzene in the presence of a free radical catalyst.

3,742,038

POLYENE COMPOUNDS

Hugo Gutmann, and Ulrich Schwieter, both of Reinach, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 608,487, Jan. 11, 1967, Pat. No. 3,577,464. This application Jan. 14, 1971, Ser. No. 106,575

Int. Cl. C07c *47/26, 69/14*; C07f *9/54*

U.S. Cl. 260—488 H **4 Claims**

Conjugated polyene dialdehyde compounds having 14–44 carbon atoms and mixtures thereof which are useful as coloring agents for foodstuffs, pharmaceutical preparations and cosmetic preparations and a method for preparing these dialdehydes including various intermediates in this method. This method is carried out by reacting a phosphonium salt of a conjugated aliphatic olefine having a terminal aldehyde radical with a conjugated aliphatic olefine having a terminal acetal linkage radical and a terminal aldehyde radical and thereafter hydrolyzing the reaction product to produce the dialdehyde. This dialdehyde may be further chain lengthened by reacting this dialdehyde with a phosphonium salt of a conjugated olefine having a terminal aldehyde radical, or by reacting with a vinyl ether or propenyl ether.

3,742,039

PROCESS FOR PRODUCING 1,4-DIACETOXY-2-BUTENE FROM BUTADIENE

Isao Ono; Tadahisa Yanagihara; Toshikuni Koga; Takao Kato, and Hiroaki Okada, all of Yamaguchi-ken, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Tokyo, Japan

Filed Sept. 29, 1970, Ser. No. 76,641

Claims priority, application Japan, Oct. 2, 1969, 44/78176

Int. Cl. C07c *67/04, 69/16*

U.S. Cl. 260—497 A **9 Claims**

A process for producing 1,4-diacetoxy-2-butene from butadiene which comprises contacting a mixed gas containing 5 to 70 percent by volume butadiene in combination with ox-

ygen, with a reaction medium of liquid acetic acid containing palladium acetate, cupric acetate, and at least one acetate component selected from the group consisting of heavy metal acetates, except palladium acetate and copper acetate, alkali metal acetate, alkaline-earth metal acetate, and mixtures thereof, wherein said reaction is conducted at a temperature in the range of 100°C. to 140°C.

3,742,040

ALKYLAMMONIUM ALKYLPHOSPHONAMIDATES

Arthur Dock Fon Toy, Stamford, Conn., and Kenneth H. Rattenbury, Morgantown, W. Va., assignors to Stauffer Chemical Company, New York, N.Y.

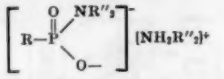
Division of Ser. No. 592,328, Nov. 7, 1966, abandoned. This application July 28, 1969, Ser. No. 870,797

Int. Cl. A01n *9/36*; **C07f** *9/44*

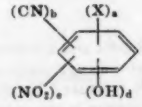
U.S. Cl. 260—501.21 **7 Claims**

An organic phosphorus composition comprising:

a. a major portion of an alkylammonium alkylphosphonoamidate of the formula:

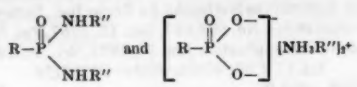


wherein R is a halo substituted alkyl of from one to eight carbon atoms inclusive, or a radical of the formula:



wherein X is a halogen, *a*, *b*, *c*, and *d*, are integers of from 0 to 5 inclusive such that the sum *a+b+c+d* is from 0 to 5, and R'' is an alkyl group containing from 12 to 18 carbon atoms; and

b. a minor amount of by-prouucts having the formulae:



wherein R and R'' are as defined above, is produced by reacting a phosphonic anhydride with a long chain alkyl amine. These compounds, exemplified by lauryl-ammonium, N-lauryl chloromethylphosphonoamidate, have utility as fungicides and bactericides.

3,742,041

PROCESS OF RESOLVING DL-SERINE M-XYLENE-4-SULFONATE

Ichiro Chibata, Suita-shi, Osaka-fu; Shigeki Yamada, Toyonaka-shi, Osaka-fu, and Masao Yamamoto, Kyoto-fu, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Oct. 2, 1969, Ser. No. 863,375

Claims priority, application Japan, Oct. 4, 1968, 43/72249; Oct. 4, 1968, 43/72250

Int. Cl. C07c *143/28*

U.S. Cl. 260—501.12 **10 Claims**

A supersaturated solution of DL-serine m-xylene-4-sulfonate is prepared. The solution is seeded with crystals of one of the optically active enantiomers of said DL-serine m-xylene-4-sulfonate before and/or after the solution reaches the point of supersaturation. Crystallization is permitted to take place and the resultant crystals are recovered. The resulting enantiomer is useful as an intermediate in preparing optically active serine.

3,742,042

PROCESS OF PREPARING A STEREOISOMER OF α-HYDRAZINO-β-(PHENYL)ALKANOIC ACIDS

Sandor Karady, Elizabeth; Seemon H. Pines, Murray Hill; Manuel G. Ly, Edison, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co. Inc., Rahway, N.J.

Filed June 24, 1970, Ser. No. 49,541

Claims priority, application Canada, Mar. 25, 1970, 338,486

Int. Cl. C07c *151/00*

U.S. Cl. 260—516 **12 Claims**

A decarboxylase inhibiting stereoisomer of a α-hydrazino-β-(substituted or unsubstituted phenyl)alkanoic acid is prepared by reacting the stereoisomer of an intermediate with a halogenating agent in an inert solvent and an aqueous base.

3,742,043

2-(ALPHA,ALPHA-BIS(TRIFLUOROMETHYL)BENZYLOXY) ACETIC ACID AND ESTERS THEREOF

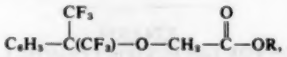
Stephen J. Kuhn, Sarnia, Ontario, Canada, assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 24, 1972, Ser. No. 246,783

Int. Cl. C07c *65/00*, *69/76*

U.S. Cl. 260—521 A **2 Claims**

New compounds are disclosed which correspond to the formula



wherein R is hydrogen or lower alkyl. They are prepared by reacting (a) esters of chloroacetic acid or bromoacetic acid with (b) α,α-bis(trifluoromethyl)benzyl alcohol in the presence of strong base. They are herbicides.

3,742,044

2-N-ALKYL-AMI NO-2-DEOXY-ALDITONITRILES AND THEIR ACID CONGENERS AS BIOCIDALS

Wallace H. Pippin, Holland, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 55,237, July 15, 1970. This application Apr. 21, 1971, Ser. No. 136,178

Int. Cl. C07c *101/00*

U.S. Cl. 260—534 M **1 Claim**

Novel 2-Alkylamino-2-desoxyalditonitriles, their acid analogs, and salts thereof, and methods of preparation are disclosed starting the glucose amination with an appropriate monoamine, followed by treatment with hydrocyanic acid to yield the corresponding alditonitrile. These compounds have varied microbiocidal activity, and further, show surface active properties.

3,742,045

DETERGENCY BUILDERS

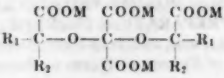
Kent P. Lannert, Freeburg, Ill., assignor to Monsanto Company, St. Louis, Mo.

Filed June 30, 1971, Ser. No. 158,539

Int. Cl. C07c *59/22*

U.S. Cl. 260—535 P **4 Claims**

Compounds having the formula



wherein M is an alkali metal or ammonium and R_1 and R_2 are hydrogen or methyl are useful sequestrants and detergency builders. Lower alkyl esters and acids of such compounds are useful intermediates for this production.

3,742,046

α-(DICHLOROVINYLTHIO)-ACETOPHENONE

Carl D. Emerson, Kansas City, Mo., and Paul C. Aichenegg, Shawnee Mission, Kans., assignors to Chemagro Corporation, Kansas City, Mo.

Filed Aug. 5, 1970, Ser. No. 61,474
Int. Cl. C07c *49/80*
U.S. Cl. 260—592 3 Claims

Beta-keto sulfides, i.e., beta-keto (trichloroethyl and dichlorovinyl) sulfides which possess plant-growth regulating properties and which may be produced by conventional methods.

3,742,047

PREPARATION OF ACID CHLORIDES

Erhard J. Prill, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 647,588, June 21, 1967, abandoned. This application Oct. 27, 1969, Ser. No. 870,969
Int. Cl. C07c *51/58*
U.S. Cl. 260—544 Y 4 Claims

A process for the preparation of carboxylic acid chlorides and more specifically, the preparation of α-chloro acetyl chloride utilizing trichloroethylene as the starting compound. Carboxylic acid chlorides are useful compounds as intermediates in organic processes for the preparation of herbicides having an α-chloroacetyl moiety.

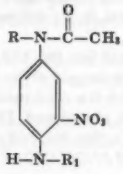
3,742,048

KERATIN FIBER DYE COMPOUNDS

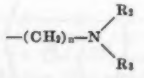
Kalopissis Gregoire, Paris; Bugaut Andree, Boulonge-sur-Seine, and Zorayan Vahan, Enghien-les-Bains, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 728,750, May 13, 1968, Pat. No. 3,617,164. This application Oct. 7, 1970, Ser. No. 78,923
Int. Cl. C07c *103/12*
U.S. Cl. 260—562 A 3 Claims

A compound of the formula



wherein R is selected from the group consisting of lower alkyl, hydroxyalkyl and alkylaminodialkyl, wherein each alkyl moiety has 1–6 carbon atoms and R_1 is selected from the group consisting of lower alkyl, lower hydroxyalkyl, lower alkoxyalkyl and



wherein n is 2–6 and R_2 and R_3 are lower alkyl having 1–6 carbon atoms, and the quaternary ammonium salt thereof, is useful as hair dyes.

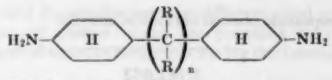
3,742,049

METHOD FOR PRODUCING BIS (4-AMINOCYCLOHEXYL) ALKANE

Hiroshi Komoto; Fusakazu Hayano, both of Saitamaken, and Toshio Takami, Tokyo, all of Japan, assignors to Asahi Kasei Kabushiki Kaisha, Kitaku, Osaka, Japan

Filed Oct. 9, 1970, Ser. No. 79,469
Claims priority, application Japan, Oct. 16, 1969, 44/82253
Int. Cl. C07c *85/00*
U.S. Cl. 260—563 D 5 Claims

A bis(4-aminocyclohexyl)alkane represented by the general formula



wherein R is hydrogen, or a methyl or ethyl group and n is 1 or 2, is made by the hydrogenation of a bis(4-nitrophenyl)alkane represented by the general formula

wherein R and n are defined above, in the presence of ruthenium oxide which shows an amorphous pattern by X-ray diffraction, aqueous ammonia or liquid ammonia and an organic solvent, at a reaction temperature of 110° – 170°C, preferably 130° – 140°C under an elevated hydrogen pressure. In this method, the proportion of the resultant three kinds of stereoisomers can be varied in a wide range.

3,742,050

CHEMICAL COMPOUNDS, PROCESSES FOR THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS INCORPORATING THE SAME

Harold Francis Hodson, London, England, assignor to Burroughs Wellcome & Co. (U.S.A.) Inc., Tuchahoe, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,722
Claims priority, application Great Britain, Feb. 28, 1969, 10,812/69
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R 19 Claims

An amidine of general formula I, as shown in the accompanying drawings, or an acid addition salt thereof wherein: R^1 and R^2 are the same of different and each is a phenyl or thien-2-yl group, optionally substituted in one or more positions by a substituent selected from the class consisting of halogen, lower alkyl, lower alkoxy, hydroxy, lower alkylthio, trifluoromethyl, phenyl, phenoxy, phenyl-(lower alkyl) and phenyl-(lower alkoxy), each of said phenyl, phenoxy, phenyl-(lower alkyl) and phenyl-(lower alkoxy) substituent groups being optionally substituted in one or more positions by a member selected from the class consisting of halogen, lower alkyl, lower alkoxy, hydroxy and lower alkylthio; A^1 is a divalent straight or branched alkylene group containing from two to six carbon atoms and one or two divalent atoms which are each an oxygen or sulphur atom, provided that there are at least two carbon atoms between the divalent atom and the —NH— group and between the two divalent atoms; A^2 is a straight or branched alkylene chain containing from one to four carbon atoms; and Z is a member selected from the class consisting of hydrogen and lower alkyl.

The compounds are specific antagonists of serotonin, useful specifically as antipressor agents, anticontracting agents and anti-inflammatory agents. Their high activity is maintained for at least 24 hours.

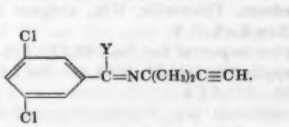
3,742,051

3,5-DICHLORO-N-(1,1,DIMETHYL-2-PROPYNYL)BENZIMIDOYL HALIDES AND DERIVATIVES

Thomas A. McLaughlin, Langhorne; Colin Swithenbank, Perkasie, and Roy Y. Yih, Doylestown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed June 2, 1971, Ser. No. 149,346
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 D 3 Claims

Novel compounds are disclosed which are 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)benzimidoyl halides and imidate, thioimidate and amidine derivatives thereof of the general structure



These compounds possess herbicidal activity.

3,742,052
DIISOPHORONE DERIVATIVES AND COMPOSITIONS CONTAINING SAME

Carl Bordenca, Rocky River, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 661,493, July 26, 1967, abandoned. This application Sept. 22, 1970, Ser. No. 74,512
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 B 7 Claims

Diisophorone derivatives and ultraviolet radiation-screening compositions containing the diisophorone derivatives have been prepared and are described.

Stable compositions comprising insecticidally active cyclopropane carboxylic acid compounds such as pyrethrinoids which are degradable by ultraviolet radiation and diisophorone derivatives which are resistant to decomposition by ultraviolet radiation are described.

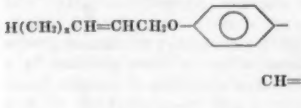
The ultraviolet radiation-screening properties and the resistance to degration by ultraviolet light of the diisophorone derivative are shown. The stabilization of cyclopropane carboxylic acid compounds and the synergizing effects of diisophorone hydrazone on the insecticidal activity of pyrethrinoids are demonstrated.

3,742,053
MESOMORPHIC PREPARATION

Edward L. Steiger, and Heinz J. Dietrich, both of Toledo, Ohio, assignors to Owen-Illinois, Inc., Toledo, Ohio

Filed June 11, 1971, Ser. No. 152,433
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 F 3 Claims

There is disclosed the preparation of mesomorphic compounds of the structure:



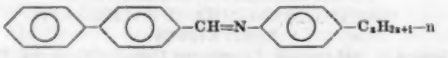
where x is an integer of 0 to 10. The compounds are prepared by the reaction of para-n-butoxyaniline and para-n-alkenyloxybenzaldehyde.

3,742,054
MESOMORPHIC COMPOSITION OF MATTER

Heinz J. Dietrich, and Edward L. Steiger, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed July 2, 1971, Ser. No. 159,554
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 F 2 Claims

There is disclosed the preparation of a mesomorphic composition of the structure:



where x is an integer of 1 to 10, typically 1 to 5. The composition is prepared by the reaction of para-n-alkylaniline and para-phenylbenzaldehyde, where the alkyl substituent contains one to 10 carbon atoms.

3,742,055
3-AMINO-BICYCLO[2.2.2]OCTAN-2-OLS

Jules Freedman, Thiensville, Wis., assignor to Colgate Palmolive, New York, N.Y.

Continuation-in-part of Ser. No. 797,233, Feb. 6, 1969. This application July 31, 1969, Ser. No. 846,605
U.S. Cl. 260—570.5 CA 8 Claims

The compounds are 3-amino-bicyclo[2.2.2.]octan-2-ols which are useful as central nervous system stimulants. Representative compounds disclosed in the application are 2-benzyl-cis-3-aminobicyclo[2.2.2]octan-2-ol hydrochloride, N-2-butyl-2-(3-trifluoromethylphenyl)cis-3-aminobicyclo [2.2.2.]octan-2-ol, and 2-phenyl-3-pyrrolidino-2-bicyclo [2.2.2]octan-2-ol maleate.

3,742,056
AROMATIC ACET AMIDOXIME-O-CARBAMATES

Rosetta M. Henderson, Wilmington, Del., assignor to E. I. DU Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 20, 1971, Ser. No. 135,806
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 G 12 Claims

Aromatic acetamidoxime-O-carbamates are novel antihypertensive or antiinflammatory agents in warm-blooded animals.

3,742,057
CHELATED SODIUM COMPOUNDS

William Bunting, Baton Rouge, La., and Arthur W. Langer, Jr., Watchung, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Feb. 27, 1970, Ser. No. 15,286
Int. Cl. C07c *87/20*, *87/38*
U.S. Cl. 260—583 P 21 Claims

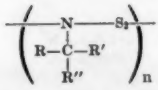
Chelated organosodium compounds comprising an organosodium having the formula RNa wherein R is a non-alkyl, hydrocarbon radical complexed with an aliphatic or cycloaliphatic tertiary chelating polyamine are prepared by admixture of the desired polyamine and organosodium. Such compounds have utility as catalysts, e.g. in telomerization and polymerization reactions, as additives, for separations, in making batteries, and in synthetic chemisty.

3,742,058
POLYMERIC TERTIARY ALKYLAMINE VULCANIZING AGENTS AND METHOD OF PREPARATION

Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 153,833, June 16, 1971, which is a continuation-in-part of Ser. No. 839,615, July 7, 1969, abandoned, which is a continuation-in-part of Ser. No. 831,722, June 9, 1969, abandoned. This application Aug. 2, 1971, Ser. No. 168,427
Int. Cl. C08f *27/06*; C07c *85/00*, *85/04*
U.S. Cl. 260—583 EE 1 Claim

Poly(tertiary alkylamine) sulfide compositions useful as vulcanizing agents for synthetic and natural rubbers, the repeating structural unit of these compositions having the following formula:



wherein n can range between 3 and 100, R, R′ and R″ are C_1–C_4 alkyl groups which can be the same or different with the proviso that the total number of carbon atoms in sum of $R+R'+\alpha^{R''}$ is from four to 12, as well as a process for manufacturing the same.

3,742,059
COLOR-STABILIZED ALKANOLAMINES

William Dowd, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 24, 1971, Ser. No. 146,489
Int. Cl. C07c *91/04*
U.S. Cl. 260—584 R 16 Claims

Undesirable color formation in alkanolamine (e.g., triethanolamine) is inhibited by incorporating an inhibiting amount of an alkali or alkaline earth metal borate (e.g., sodi-

um pentaborate) or an alkanolamine ester of boric acid into the alkanolamine.

3,742,060

PREPARATION OF AMINES

Ralph W. Lagally, and Johann G. D. Schulz, both of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 24, 1969, Ser. No. 879,601
Int. Cl. C07c *85/04*
U.S. Cl. 260—585 A 3 Claims

A process for preparing alkyl amines which involves reacting an alkyl halide with ammonia in water as a reaction medium.

3,742,061

PROCESS FOR THE EXTRACTION OF HYDROGEN PEROXIDE FROM WORKING SOLUTIONS OF THE ALKYLANTHRAQUINONE PROCESS

Gerhard Kabisch, Rheinfelden, and Siegfried Raupach, Beuggen, both of Germany, assignors to Deutsche-Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Sept. 2, 1970, Ser. No. 69,153
Claims priority, application Germany, Sept. 10, 1969, P 19 45 752.4
Int. Cl. C01b *15/02*; B01d *11/00*
U.S. Cl. 423—588 11 Claims

Hydrogen peroxide is extracted from the working solution of the alkyl anthraquinone process by solvents which are lighter than water and which produce the dispersed phase in the extraction step. The extraction is carried out in unfilled towers which at the bottom are fitted with known elements for dispersing organic liquids, e.g. perforated plates.

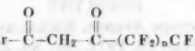
3,742,062

FLUORINATED BETA-DIKETONES

Cecil C. Chappelow, Jr., and James F. Engel, both of Kansas City, Mo., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Sept. 4, 1970, Ser. No. 69,939
Int. Cl. C07c *49/80*
U.S. Cl. 260—592 6 Claims

A new class of compounds useful, for example, as metal extractants is provided. The compounds are β-diketones of the formula



wherein *Ar* is a perfluoro aromatic radical and
n has a value of 0 to 15. The compounds are produced via the Claisen condensation of an acetylaromatic compound and the lower alkyl ester of a perfluoroacid.

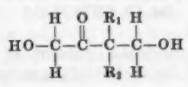
3,742,063

DIHYDROXYBUTANONES

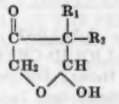
Hugh Hagemeyer, Jr., and Alfred G. Robinson, III, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 24, 1970, Ser. No. 101,403
Int. Cl. C07c *49/18*
U.S. Cl. 260—594 11 Claims

Dihydroxybutanones having the general formula



wherein R_1 and R_2 are the same or different alkyl groups of from one to 10 carbon atoms are prepared by selective hydrogenation of hydroxy furanones having the formula



wherein R_1 and R_2 are as previously described. The selective hydrogenation of the starting material is effected at a temperature in the range of between 80° to 115° C. and a pressure of between 500 to 4,000 psig. in the presence of a Raney nickel catalyst. The dihydroxybutanones are useful as intermediates for preparation of commercially useful products such as polyols, solvent esters, polyesters and polyurethane products.

3,742,064

PHOSPHONIUM COMPOUNDS

Julius Diamond, Lafayette Hill, and King Auyang, Philadelphia, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Dec. 17, 1970, Ser. No. 99,313
Int. Cl. C07f *9/54*
U.S. Cl. 260—606.5 F 33 Claims

Novel aralkyl phosphonium salts have been prepared. Compounds of this invention possess useful gastric anti-secretory, spasmolytic and anti-ulcerogenic properties. A method of treating gastrointestinal hyperacidity and ulceration has also been disclosed.

3,742,065

PROCESS FOR FORMING DIETHYLSULFIDE OR DIPROPYLSULFIDE

Robert L. Stoffer, Naperville, Ill., and Thomas D. Nevitt, Valparaiso, Ind., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 767,499, Oct. 14, 1968, abandoned. This application Nov. 2, 1970, Ser. No. 86,352
Int. Cl. C07c *149/00*
U.S. Cl. 260—609 R 9 Claims

A process for forming diethylsulfide or dipropylsulfide, which process may be employed to desulfurize various refinery streams such as distillate fuel bases, comprising reacting an olefin selected from the group consisting of ethylene and propylene with a sulfide reactant containing a dialkylsulfide wherein each alkyl group contains at least two carbon atoms in the presence of a catalyst selected from the group consisting of silica-alumina and alumina at a temperature in the range of from about 450°F. to about 600°F. and a pressure of from about 15 p.s.i.g. to about 500 p.s.i.g.

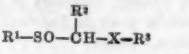
3,742,066

ETHER AND THIOETHER METHYL SULFOXIDES

Genichi Tsuchihashi, Tokyo, and Katsuyuki Ogura, Kyota, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Dec. 22, 1971, Ser. No. 211,100
Claims priority, application Japan, Apr. 20, 1971, 46/24908; May 11, 1971, 46/30810
Int. Cl. C07c *149/14*
U.S. Cl. 260—609 A 24 Claims

A novel sulfoxide derivative of the general formula



wherein R^1 and R^3 are the same or different, and each represents and alkyl group having 1 to 4 carbon atoms, a phenyl group or a halo- or methyl-substituted phenyl group, R^2 is a hydrogen atom, a lower alkyl group, benzyl group, or a p-methoxy- or P-bromo-benzyl group, R^1 and R^2, together,

may form an alkylene group containing 3 carbon atoms, and X is an oxygen or sulfur atom, and to a process for its preparation.

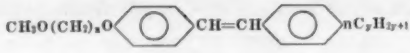
3,742,067

ALKYL-STILBENE LIQUID-CRYSTAL COMPOUNDS

Edward L. Steiger, and Heinz J. Dietrich, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 8, 1971, Ser. No. 154,688
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 A 2 Claims

There is disclosed the preparation of novel p-methoxy-alkylene-oxy-p′-n-alkyl-stilbene liquid-crystal compounds of the structure:



where *x* and *y* are the same or different integers of 1 to 10, typically 1 to 5.

3,742,068

ETHERS OF 2,2,9,9-TETRAMETHYL-1,10-DECANEDIOL

George W. Moersch, 645 Riverview, Ann Arbor, Mich., and Paul L. Creger, 1730 Covington Drive, Ann Arbor, Mich.

Filed Apr. 17, 1970, Ser. No. 29,704
Int. Cl. C07c *41/10, 43/04*
U.S. Cl. 260—615 R 2 Claims

1.10-Di-(lower alkoxy)-2,2,9,9-tetramethyldecanes, and structurally-related trialkylsilyl compoiunds, aldehyde, ketone, and semicarbazones. The compounds lower serum triglyceride levels. The 1,10-di-(lower alkoxy) compounds can be produced by reacting 2,2,9,9-tetramethyl-1,10-decanediol with a lower alkylating agent in the presence of a base. The trailkylsilyl compounds can be produced by reacting the same diol with a silylating agent. The aldehyde can be roduced by hydrolysis of a substituted imine. The ketone can be produced by reacting a carboxylic acid, carboxylate salt, or nitrile with methyllithium under anhydrous conditions, followed by hydrolyzing the product. The aldehyde and ketone can be converted to semicarbazone derivatives by reaction with semicarbazide or its acid-addition salt.

3,742,069

PURIFICATION OF POLYGLYCEROLS

Robert H. Hunter, Mendenhall, Pa., assignor to ICI America Inc., Wilmington, Del.

Filed July 6, 1970, Ser. No. 52,704
Int. Cl. B01j *1/08*; C07c *43/02*
U.S. Cl. 260—615 R 9 Claims

Disclosed is a process for the purification of a crude polyglycerol product which comprises preparing a slurry of an inert finely divided solid filtering aid and an aqueous solution of a crude polyglycerol, such solution having a pH of from 10 to 12, separating the solid and liquid phase of the slurry, passing the liquid phase through an anion exchange resin, and then passing the liquid phase through a cation exchange resin.

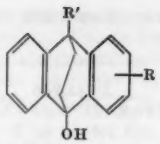
3,742,070

SUBSTITUTED 9,10-DIHYDRO - 9,10-ETHANO -9-ANTHROLS AND PROCESS FOR PREPARATION

Jacques Robert Boissier, Paris, and Roger Ratouis, Saint Cloud, both of France, assignors to Societe Anonyme dite Societe Industrielle pour la Fabrication des Antibrotigues (S.I.F.A), Puteaux, France

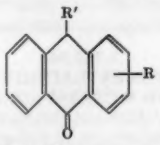
Continuation of Ser. No. 639,012, May 17, 1967, abandoned.
This application Sept. 8, 1970, Ser. No. 70,229
Int. Cl. C07c *35/22*
U.S. Cl. 260—618 F 5 Claims

The compounds are new substituted 9,10-dihydro -9,10-ethano -9-anthrols of formula:



R - R′: hydrogen, fluorine, chlorine or bromine atoms, lower alkyl or alkoxy or trifluoromethyl radicals, (at least one of the substituents R or R′ not being a hydrogen atom)

They are extremely useful intermediates for the preparation of new pharmacologically active products. The compounds are prepared by the reaction of a substitued anthrone of formula



or of any easily hydrolysable ester of said anthrone, with ethylene under pressure, while heating in a solvent, and then possibly hydrolysis of the ester.

3,742,071

PROCESS FOR THE PRODUCTION OF HYDROQUINONE

Jerry D. Holmes, and Hugh J. Hagemeyer, Jr., both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,325
Int. Cl. C07c *37/00*
U.S. Cl. 260—621 R 11 Claims

Hydroquinone is produced by a process involving the reacting of acetylene with carbon monoxide and hydrogen in a non-reactive solvent containing a phosphine-rhodium complex catalyst having the general formula

$$[(C_6H_5)_3P]_nRh(CO)_yX$$

wherein

X is Cl or I;
n is 1, 2 or 3;
y is 0, 1 or 2; and
$n+y=3$

at a temperature of from about 100°C. to 250°C. and a pressure of from about 500 to 8,000 psi.

3,742,072

NITRATION OF TOLUENE AND NITROTOLUENES TO FORM TNT

Milton Roth, 11 Lenape Avenue, Rockaway, N.J.

Filed Mar. 28, 1972, Ser. No. 238,975
Int. Cl. C07c *79/10*
U.S. Cl. 260—645 4 Claims

The invention provides a novel method for recovering and recycling nitrotoluenes contained in aqueous waste liquors obtained in the manufacture of TNT, particularly from systems for filtering vapors from spent sulfuric acid concentrators. In the novel method, the nitrotoluenes are efficiently and economically extracted from such liquors with toluene and the toluene containing the extracted nitrotoluenes is nitrated to produce TNT of military specification grade.

3,742,073

CONVERSION OF CHLOROAROMATICS TO META DERIVATIVES BEYOND EQUILIBRIUM

John D. Bacha, Monroeville, and Charles M. Selwitz, Pitcairn, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 3, 1969, Ser. No. 881,850
Int. Cl. C07c *25/04*
U.S. Cl. 260—650 R 2 Claims

The meta chloroaromatic content of the chloroalkylbenzenes prepared by a $HF\text{-}BF_3$ catalyzed isomerization

process may be increased beyond the expected equilibrium by terminating the isomerization before equilibrium is attained, separating the resulting organic and HF layers and subjecting the HF layer to a temperature of from about 40° to 160°C. The process is particularly well suited to the formation of greater than equilibrium amounts of 1,3,5-chloroxylene and metachlorotoluene from isomeric mixtures of chloroxylenes and chlorotoluenes, respectively.

3,742,074

PROCESS FOR THE PREPARATION OF AROMATIC TRIFLUOROMETHYL COMPOUNDS OF THE BENZENE SERIES

Hans Hermann, and Helmut Lindner, both of c/o Farbwerke Hoechst, Frankfurt/Main, Germany

Filed Dec. 29, 1970, Ser. No. 102,532

Claims priority, application Germany, Dec. 31, 1969, P 19 65 782.0

Int. Cl. C07c *25/14*

U.S. Cl. 260—651 F **9 Claims**

The preparation of trifluoromethyl compounds of the benzene series from the trichloromethyl derivatives and hydrogen fluoride is improved by using hexamethylene tetramine as a catalyst. The products are useful and versatile organic intermediates for dyestuffs.

3,742,075

STABILIZED 2,3-DICHLORO-1,3-BUTADIENE

Rudolf Mayer-Mader, Cologne, and Karl Dinges, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 4, 1971, Ser. No. 121,180

Claims priority, application Germany, Mar. 25, 1970, P 20 14 382.2

Int. Cl. C07c *17/40, 17/42*

U.S. Cl. 260—652.5 P **4 Claims**

This invention relates to the stabilization of monomeric 2,3-dichloro-1,3-butadiene, wherein a piperazine derivative corresponding to the formula :

in which R represents hydrogen, a linear of branched alkyl radical with one to five carbon atoms or a linear or branched hydroxyalkyl radical with two to five carbon atoms, is added to the monomer.

3,742,076

PROCESS FOR THE PRODUCTION OF 5-ETHYLIDENE NORBORNENE-2

Horoshuke Imai, Yokohama, and Mitsuo Matsuno, Kawasaki, both of Japan

Filed Mar. 3, 1971, Ser. No. 120,721

Claims priority, application Japan, Mar. 6, 1970, 45/18705

Int. Cl. C07c *5/24*

U.S. Cl. 260—666 PY **12 Claims**

A process is disclosed for preparing 5-ethylidene norbornene-2 at high yield and with minimum cost. The process is characterized by the Diels-Alder reaction of 3-halobutene-1 with cyclopentadiene, whereby there is produced 5-haloethyl norbornene-2. This product is dehydrohalogenated with use of a Lewis base thereby obtaining 5-ethylidene norbornene-2.

3,742,077

METHOD OF PREPARING TELOMERS UTILIZING AS CATALYSTS HYDROCARBON-SOLUBLE ORGANOMETALLIC COMPLEXES OF METALS OF GROUPS I AND IIA OF THE PERIODIC TABLE

Conrad W. Kamienski, Gastonia, N.C., and Jerome F. Eastham, Knoxville, Tenn., assignors to Lithium Corporation of America, New York, N.Y.

Continuation-in-part of Ser. No. 728,838, May 13, 1968. This application July 23, 1970, Ser. No. 57,820

Int. Cl. C07c *15/00*

U.S. Cl. 260—668 B **12 Claims**

Method of preparing telomers, such as those derived from toluene as the telogen and 1,3-butadiene as the taxogen, which comprises carrying out the telomerization reaction in the presence of a hydrocarbon-soluble organometallic complex of metals of Groups I and IIa of the periodic system, exemplified by complexes of di-n-butylmagnesium with n-butyllithium of n-butyl-potassium.

3,742,078

DEHYDROGENATION WITH A CATALYST CONTAINING PLATINUM, GERMANIUM AND AN ALKALI OR ALKALINE EARTH METAL

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 852,104, Aug. 21, 1969, Pat. No. 3,647,719. This application Oct. 20, 1971, Ser. No. 191,093

Int. Cl. C07c *5/18*

U.S. Cl. 260—668 D **15 Claims**

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenatable conditions with a catalytic composite comprising a combination of catalytically effective amounts of platinum group compoent, a germanium component, and an alkali or alkaline earth component with a porous carrier material. A specific example of the catalytic composite disclosed herein is a combination of a platinum component, a germanium component, and an alkali or alkaline earth component with an alumina carrier material wherein the components are present in amounts sufficient to result in the composite containing, on an elemental basis, 0.01 to 2 wt. % platinum, 0.01 to 5 wt. % germanium, and 0.1 to 5 wt. % of the alkali or alkaline earth metal.

3,742,079

OXIDATIVE DEHYDROGENATION OF ETHYLBENZENE TO STYRENE USING A GOLD ON TITANIA CATALYST

Robert W. Etherington, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed June 30, 1971, Ser. No. 158,535

Int. Cl. C07c *15/10*

U.S. Cl. 260—669 R **5 Claims**

Styrene is prepared from ethylbenzene by contacting a mixture of ethylbenzene oxygen-containing gas and an inert diluent with a catalyst consisting of gold supported on or admixed with titania, at an elevated temperature.

3,742,080

RHODIUM BASED CATALYSTS FOR THE SYNTHESIS OF 1,4-DIENES

Aaron Chung-Liong Su, Wilmington, Del., assignor to E. I. du Pont Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 815,486, April 11, 1969, Pat. No. 3,640,898. This application June 18, 1971, Ser. No. 154,653

Int. Cl. C07c *3/10, 11/12*

U.S. Cl. 260—680 B **10 Claims**

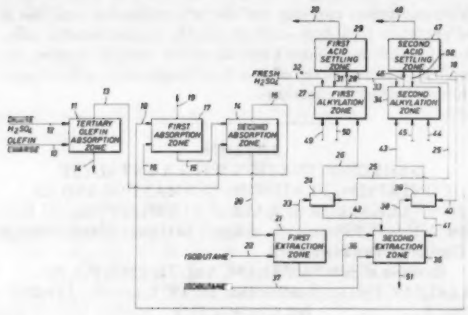
Improved catalysts are provided for the synthesis of 1,4-dienes from α-monoolefins and conjugated dienes. The catalysts are rhodium (III) salts in combination with amides, phosphoramides, phosphine oxides, or water. The improved catalysts allow control of the trans-cis ratio of the 1,4-diene

formed and are operable at useful rates in a wide range of solvent systems, both protonic and aprotic.

3,742,081
SEPARATE RECOVERY OF DIISOPROPYL SULFATE AND DIBUTYL SULFATE IN AN ALKYLATION ACID RECOVERY PROCESS

Arthur R. Goldsby, Chappaqua, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 4, 1971, Ser. No. 195,797
Int. Cl. C07c 3/54
U.S. Cl. 260—683.62 **6 Claims**



A sulfuric acid alkylation process wherein acid consumption is reduced by reacting spent acid with propylene and butylene to form diisopropyl sulfate and dibutyl sulfate in an olefin absorption zone and wherein the dibutyl sulfate and diisopropyl sulfate are separately recovered in an extraction zone. The efficiency of the alkylation reaction and the quality of alkylated products are enhanced by passing the recovered dibutyl sulfates and diisopropyl sulfates to separate alkylation reaction zones.

3,742,082
DIMERIZATION OF OLEFINS WITH BORON TRIFLUORIDE

James A. Brennan, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 200,237
Int. Cl. C07c 3/18
U.S. Cl. 260—683.9 **5 Claims**

A process is provided for dimerizing 1-olefins which comprises contacting such olefins in a reaction zone with a minor proportion of at least one catalyst selected from the group consisting of phosphoric acid-promoted and water-promoted boron trifluoride catalyst in a mole ratio of catalyst to olefins of from about 0.005:1 to about 0.1:1 and at a temperature from about 100°C. to about 150°C.

3,742,083
THERMALLY STABLE POLYCARBONATE COMPOSITION

Charles A. Bialous, Mount Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 28,987, April 15, 1970, Pat. No. 3,651,174. This application July 29, 1971, Ser. No. 167,487 The portion of the term of this patent subsequent to Mar. 7, 1989, has been disclaimed.
Int. Cl. C08g 49/04, 51/56, 17/13
U.S. Cl. 260—824 R **5 Claims**

A polycarbonate composition consisting of an aromatic polycarbonate with 0.1 to about 2.0 weight percent of an alkaline earth carbonate and an organosiloxane polymer. The amounts of the organosiloxane polymer may be present in an amount of 0.1-2.0 weight percent based on the weight of the polycarbonate. More specifically, the alkaline earth carbonate which can be employed herein is barium carbonate.

3,742,084
CORONA-RESISTANT ELECTRICALLY INSULATING ORGANIC POLYMERIC COMPOSITIONS

Murray Olyphant, Jr., East Oakdale, and Arno Don Bridenbecker, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 856,846, Sept. 10, 1969, abandoned. This application Mar. 4, 1971, Ser. No. 121,171
Int. Cl. C08f 29/10, 35/02; H01b 3/46
U.S. Cl. 260—827 **9 Claims**

Organic, polymeric, electrically insulating compositions having high corona resistance comprising a base organic electrically insulating material and, in an amount equaling 1–10 percent of the weight of the base material, a silicone resin. A typical silicone resin is a hydrolyzate type of branched silicone resin prepared by condensation of mixed methyl and phenyl chlorosilanes.

3,742,085
THERMALLY STABLE POLYCARBONATE COMPOSITION

Charles A. Bialous, Mount Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 28,987, April 15, 1970, Pat. No. 3,651,174. This application July 29, 1971, Ser. No. 167,486
Int. Cl. C08g 47/10, 49/04; C08f 29/16
U.S. Cl. 260—827 **5 Claims**

A polycarbonate composition consisting of an aromatic polycarbonate with 0.1 to about 2.0 weight percent of an alkaline earth carbonate and a mixture of an organosiloxane polymer and a polytetrafluoroethylene. The amounts of the organosiloxane polymer and polytetrafluoroethylene may be present in an amount of 0.1–2.0 weight percent each based on the weight of the polycarbonate. More specifically, the alkaline earth carbonate which can be employed herein is barium carbonate.

3,742,086
THERMOSETTING COMPOSITION

Joseph N. Epel, 22559 Bellbrook, Southfield, Mich., and Michael Hugh Richmond, 1314 Chudleigh Drive, Sarnia, Ontario, Canada

Filed May 28, 1971, Ser. No. 148,212
Int. Cl. C08f 33/00
U.S. Cl. 260—836 **4 Claims**

An improved thermosetting resin composition and the process of producing a thermoset resin comprising the reaction of an epoxidized polymer, especially epoxidized polybutadiene, with an alpha-beta unsaturated monocarboxylic compound and a compatible copolymerizable monomer.

3,742,087
THERMOPLASTIC BLENDS OF AROMATIC POLYSULFONES AND THERMOPLASTIC POLYESTERS

Eric Nield, Hertford, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 15, 1970, Ser. No. 72,495
Claims priority, application Great Britain, Sept. 25, 1969, 47,261/69
Int. Cl. C08g 39/10
U.S. Cl. 260—860 **17 Claims**

Thermoplastic polymer blends which contain from 99.9 percent to 1 percent of one or more aromatic polysulphones and from 0.1 percent to 99 percent of one or more thermoplastic polyesters have a desirable combination of physical properties and in particular better flow properties in the melt than the polysulphones themselves.

3,742,088

POLYCARBONATE RESINS BLENDED WITH ELASTOMERS FOR IMPROVED IMPACT STRENGTH

Charles B. Holder; Isaac D. Rubin, both of Wappingers Falls, and Carmen M. Cusano, Poughkeepsie, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,789
Int. Cl. C08g 39/10
U.S. Cl. 260—873 5 Claims

The properties, in particular the impact strength, of polycarbonate resins having an average molecular weight of at least 8000 are improved by blending such resins with from about 3 percent to about 35 percent by weight of at least one elastomer characterized by an average molecular weight ranging from about 100,000 to about 2,000,000 and a second order transition (Tg) below 0°C.

3,742,089

CURABLE COMPOSITIONS OF MALEIMIDE SUBSTITUTED AROMATIC MATERIAL

Siegfried H. Schroeter, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 21, 1971, Ser. No. 164,810
Int. Cl. C08g 39/10
U.S. Cl. 260—873 2 Claims

Solventless blends are provided of aliphatically unsaturated maleimido substituted aromatic carbocyclic organic materials, and aliphatically unsaturated organic ethers. The blends are convertible to high performance films when cured with ultraviolet radiation on the surface of various substrates to impart improved surface characteristics thereto.

3,742,090

THERMOPLASTIC RESIN COMPOSITION CONTAINING AN ETHYLENE-VINYL ACETATE GRAFT COPOLYMER

Hiroshi Kiuchi; Keisuke Oshima; Takashi Nishidoi, and Toshihiko Aya, all of Otsu, Shiga, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 7, 1969, Ser. No. 822,671
Claims priority, application Japan, May 9, 1968, 43/30508
Int. Cl. C08f 37/18
U.S. Cl. 260—876 R 19 Claims

Weather- and impact-resistant resin copolymer composition consists of a mixture of 0.36 — 90 percent by weight of graft polymer (C) and 10 — 99.64 percent by weight of a resin component (D).

Resin component (D) is the polymer or copolymer resulting from polymerization of monomer mixture (A).

Graft polymer (C) is a copolymer of a monomer mixture (A) and trunk rubber component (B), the copolymerization percentage ratio by weight of A:B(degree of grafting)being 20 — 500 percent.

Monomer mixture (A) is selected from the group consisting of: aromatic vinyl compound, alkyl methacrylate wherein the alkyl group has one to three carbon atoms, and acrylonitrile.

Trunk rubber component (B) is an ethylene-vinyl acetate copolymer having a side chain which includes a $CH_2 = C(CH_3)COO—$group.

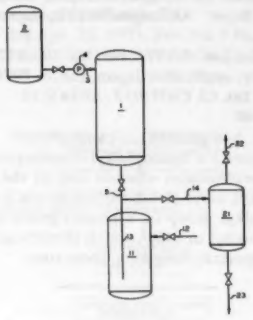
3,742,091

VINYL MONOMER POLYMERIZATION PROCESS

Charles W. Moberly, and Gerald R. Kahle, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 17, 1970, Ser. No. 64,504
Int. Cl. C08f 15/06, 15/00, 19/08
U.S. Cl. 260—879 8 Claims

Agglomeration of vinyl polymers produced by liquid phase polymerization reactions is substantially inhibited when the polymerization is effected in the presence of certain polymeric additives which are soluble in the liquid monomer. In some instances the polymeric additive imparts to the polymeric product, upon molding, improved impact strength.



3,742,092

METHACRYLONITRILE POLYMERIZATION PROCESS

June T. Duke, Chagrin Falls, and Dorothy C. Prem, Warrensville Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed July 14, 1971, Ser. No. 162,540
Int. Cl. C08f 15/22, 19/06, 19/08
U.S. Cl. 260—880 R 7 Claims

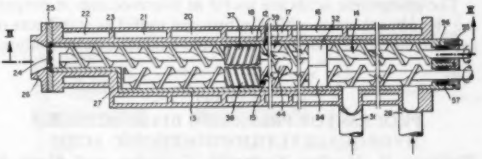
A polymerization process is described in which impact resistant methacrylonitrile homopolymers and copolymers are prepared in the presence of a diene rubber by free radical polymerization at improved rates by conducting the polymerization in aqueous emulsion in the presence of some preformed seed polymer having small particle size.

3,742,093

METHOD OF SEPARATING AN INSOLUBLE LIQUID FROM POLYMER COMPOSITION

Richard H. Skidmore, Strafford, Pa., assignor to Welding Engineers, Inc., Norristown, Pa.

Filed Apr. 8, 1970, Ser. No. 26,622
Int. Cl. C08f 41/12; B29b 1/04
U.S. Cl. 260—893 14 Claims



Apparatus and method for separating a substantially insoluble liquid from a mixture containing a polymer or polymer mixture. The liquid is a vapor at the usual temperature and pressure of the polymer extrusion operation andis kept in liquid form by providing a high pressure region in the extruder. A liquid outlet is provided upstream of the high pressure region and the liquid is maintained under pressure and taken off as a liquid. The pressure-maintaining means may be a liquid outlet provided with a pressure control valve, trap or the like.

3,742,094

CYANOPHENYL O,S-DIALKYL PHOSPHOROTHIOLATES

Shigeo Kishino; Yasuo Yamada; Yoshio Kurahashi, and Toyohiko Kume, all of Tokyo, Japan, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 5, 1971, Ser. No. 104,177
Claims priority, application Japan, Jan. 8, 1970, 45/2286
Int. Cl. C07f 9/18; A01n 9/36
U.S. Cl. 260—940 18 Claims

Optionally halogenated cyanophenyl O,S-dialkyl phosphorothiolates, i.e. cyanophenyl or halocyanophenyl O,S-dialkyl phosphorothiolates wherein one of the alkyl groups may be cycloalkyl, alkyl of 4–6 carbon atoms, a chlorine-substituted lower alkyl group or a phenyl group and the other alkyl group is methyl or ethyl, which thiolphosphates possess microbicidal, especially fungicidal properties.

3,742,095

HYDROCYALKYLCARBAMYLALKYLPHOSPHONATES

Edward N. Walsh, New City, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 644,073, June 7, 1967, abandoned. This application July 13, 1970, Ser. No. 54,579
Int. Cl. C07f 9/40; C09k 3/28; C08g 22/44
U.S. Cl. 260—943 7 Claims

The compounds described herein are hydroxyalkylcarbamylalkylphosphonates which are useful in preparing flame resistant polymer compositions. Exemplary of these compounds are bis-(hydroxyethyl) bis-(hydroxyethyl)carbamylethylphosphonate and diethyl bis-(hydroxyethyl)carbamylmethylphosphonate.

3,742,096

PHOSPHINIC ACIDS AND ESTERS OF ALKYLATED P-HYDROXYPHENYLALKANES

John Denon Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 618,988, Feb. 27, 1967, Pat. No. 3,534,127, which is a continuation-in-part of Ser. No. 612,336, Jan. 30, 1967, Pat. No. 3,488,368. This application Sept. 30, 1970, Ser. No. 76,998
Int. Cl. C07f 9/02
U.S. Cl. 260—953 8 Claims

Phosphinic acids and their esters of alkylated p-hydroxyphenylalkanes are prepared from alkylated p-hydroxyphenylalkyl halides and phosphorus halides in the presence of a complexing metal halide Lewis acid followed by a dissociation of the reaction complex with water to form the corresponding phosphinic acid or with an alcohol followed by water to form the corresponding phosphinic ester.

The phosphinic acids are useful as intermediates in preparing the phosphinates which in turn are useful as stabilizers of organic materials which are subject to oxidative deterioration.

3,742,097

PROCESS FOR PREPARING DIADDUCTS OF HYDROCARBYLTHIOPHOSPHORIC ACIDS

Wolfgang H. Mueller, Karlsruhe, Germany, and Alexis A. Oswald, Mountainside, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Division of Ser. No. 541,135, April 8, 1966, abandoned. This application Dec. 10, 1969, Ser. No. 884,046
Int. Cl. C07f 9/16; A01n 9/36
U.S. Cl. 260—968 5 Claims

Sequential diadducts of methylacetylene are obtained in radical reactions with a dihydrocarbyl thiophosphoric acid and then with a hydrocarbon thiol. The order of addition is critical in obtaining novel compositions which are attractive as pesticides since their high effectiveness is coupled with a surprisingly low toxicity towards mammalians.

3,742,098

PROCESS FOR THE PREPARATION OF S-VINYLIC ESTERS OF THIOPHOSPHORUS ACIDS

Alexis A. Oswald, Mountainside, N.J., and Joseph H. Lesser, Woodside, N.Y., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed July 7, 1969, Ser. No. 839,645
Int. Cl. C07f 9/16; A01n 9/36
U.S. Cl. 260—971 1 Claim

Phosphoryl disulfides can be added to acetylenes to form S-vinylic thiophosphate esters. The additions occur by way of a free radical mechanism in the presence of radiation and/or chemical initiators. The adducts are highly effective as pesticides.

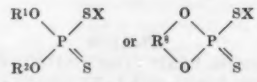
3,742,099

PREPARATION OF ALKYL OR ARALYKYL ESTERS OF DITHIOPHOSPHORIC ACID OR DERIVATIVES THEREOF BY TRANSESTERIFICATION

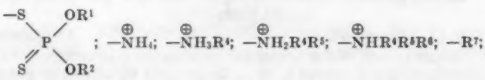
Terence Colclough, Wantage, and Ronald Brookes, Drayton, both of England, assignors to Esso Research and Engineering Company, Linden, N.J.

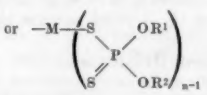
Filed Nov. 23, 1970, Ser. No. 92,152
Claims priority, application Great Britain, Jan., 1970, 2,179/70
Int. Cl. C07f 9/08, 9/18
U.S. Cl. 260—982 9 Claims

A process for the preparation of alkyl or substituted alkyl esters of dithiophosphoric acid or derivatives thereof which are useful as intermediates for insecticides, or as lubricating oil additives. In this process an alcohol of the formula R^3OH is reacted with a compound of the formula



where R^1 and R^2 are hydrocarbyl groups, at least one being an aryl or alkaryl group, R^3 is a divalent arylene group and X is —H,





where R^3, R^4, R^5, R^6 and R^7 are hydrocarbyl groups, M is a metal and n is the valency of the metal.

3,742,100

PROCESS FOR THE PREPARATION OF ANHYDROUS MGCL PRILLS

Oystein Boyum, Skien; Karsten Eigil Eriksen, Eidanger; Per Solberg, Porsgrunn, and Kjell Wallin Tveten, Bole, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

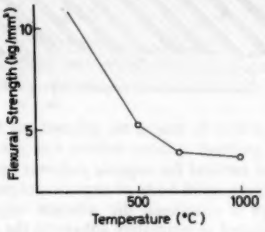
Filed Oct. 27, 1970, Ser. No. 84,537
Claims priority, application Norway, Oct. 29, 1969, 4293/69
Int. Cl. B01k 2/04
U.S. Cl. 264—14 12 Claims

The process prepares magnesium chloride prills suitable for the electrolytic production of magnesium from a melt. Molten magnesium chloride hydrate having a moisture content corresponding to from about 3.8 to about 6.2 moles of H_2O per mole of $MgCl_2$ is converted into droplets which are solidified to form prills. The prills are dehydrated to the desired low-moisture magnesium chloride or substantially anhydrous magnesium chloride.

3,742,101
CARBON-GLASS COMPOSITE AND MANUFACTURING METHOD THEREFOR

Koji Ouchi; Michio Horie, both of Kawaguchi, and Hidemasa Honda, Tosu, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Sept. 30, 1970, Ser. No. 76,683
Claims priority, application Japan, Oct. 2, 1969, 44/78166
Int. Cl. B29c 25/00; C01b 31/00
U.S. Cl. 264—29 2 Claims

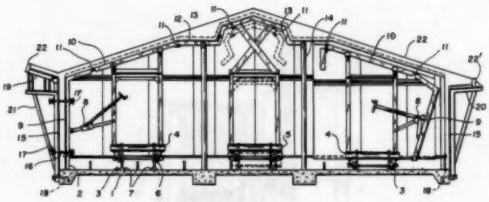


A carbon-glass composite is manufactured by molding and curing glass fibers mixed with a resin. The molded product is heated in a vacuum at a temperature of 200°C to 1700°C in an inert or reducing atmosphere.

3,742,102
METHOD OF MAKING A CAST CONCRETE HOUSE HAVING INTEGRAL WALLS AND ROOF USING MOBILE INTERIOR FORMS

Charles W. Stickler, Jr., Mohnton, Pa., assignor to Gray Tech Industries, Inc., Mohnton, Pa.

Continuation-in-part of Ser. No. 123,539, March 12, 1971, abandoned. This application Nov. 18, 1971, Ser. No. 200,060
Int. Cl. B28b 7/04; E04b 1/16, 1/32
U.S. Cl. 264—32 6 Claims

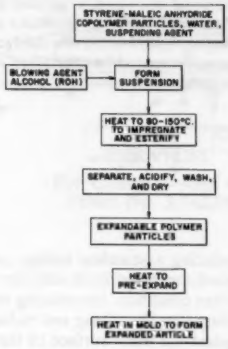


This invention relates to a cast monolithic house and to a method for casting, simultaneously, the roof, end wall and sidewalls thereof at the site. The method involves hinging together roof and sidewall forming portions of a form and lifting such form into place by wheeled carriers which are guided by jigs on the floor of the house. Jacks, mounted on the wheeled carriers, will lift the form into place. Wall form positioning linkage is connected between the wheeled carriers and the sidewall forming portions of the form to retract or expand them into normal vertical position in wedging relationship with floor bucks serving as base portions of said sidewall forming portions.

3,742,103
METHOD FOR PREPARING AND MOLDING EXPANDABLE, NON-EQUIMOLAR STYRENE-MALEIC ACID HALF ESTER COPOLYMER PARTICLES

John P. Spicuzza, Jr., Pittsburgh, Pa., assignor to Sinclair-Koppers Company, Pittsburgh, Pa.

Filed Apr. 22, 1971, Ser. No. 136,538
Int. Cl. B29d 27/00, 27/08; C08f 19/10, 27/12, 47/10
U.S. Cl. 264—53 4 Claims

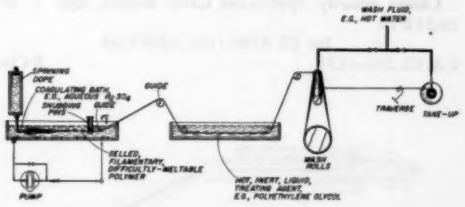

STYRENE-MALEIC ANHYDRIDE COPOLYMER PARTICLES, WATER, SUSPENDING AGENT
BLOWING AGENT ALCOHOL (ROH)
FORM SUSPENSION
HEAT TO 80–150°C. TO IMPREGNATE AND ESTERIFY
SEPARATE, ACIDIFY, WASH, AND DRY
EXPANDABLE POLYMER PARTICLES
HEAT TO PRE-EXPAND
HEAT IN MOLD TO FORM EXPANDED ARTICLE

Expandable, non-equimolar styrene-maleic acid half ester copolymer particles are prepared by a process comprising impregnating styrene-maleic anhydride copolymer particles with an alcohol in the presence of a hydrocarbon blowing agent in an aqueous suspension, heating the impregnated particles to allow at least partial esterification of the anhydride groups by the alcohol, cooling the suspension to room temperature, and separating the impregnated, partially esterified copolymer particles from the aqueous suspension.

3,742,104
PRODUCTION OF SHAPED SYNTHETIC ARTICLES HAVING IMPROVED DYEABILITY

Saunders E. Jamison, Summit, and John W. Soehngen, Berkeley Heights, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 481,587, Aug. 23, 1965, abandoned. This application May 8, 1970, Ser. No. 33,180
Int. Cl. D01d 5/12; D01f 3/10
U.S. Cl. 264—78 4 Claims

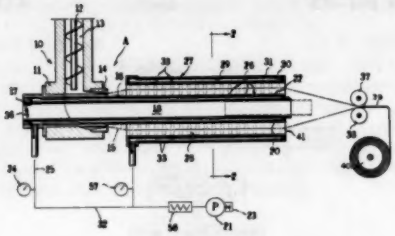


A chemical relaxation treatment for increasing dyeability of wet spun difficultly meltable filamentary material such as high melting polyamides, polyurethanes and polyureas which filaments are spun from a concentrated sulfuric acid solution and coagulated in an aqueous sulfuric acid bath. The residual sulfuric acid contained in the filamentary material is subsequently activated to increase the dyeability of the resulting product.

3,742,105
METHOD FOR PRODUCING A SEAMLESS TUBING

Shigeharu Kuroda, 1994-29, Oshikuma-cho, Nara, Japan

Filed May 5, 1970, Ser. No. 34,688
Int. Cl. B29c *23/00, 25/00*; B29d *23/04*
U.S. Cl. 264—89 1 Claim

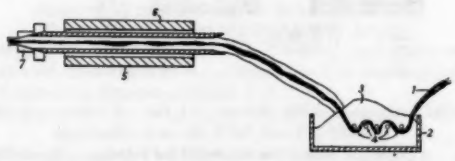


A method for producing a seamless tubing comprises extruding the thermoplastic material from extruder in the form of tubing in semi-molten condition, introducing the first compressed cooling medium into the tubing and radially spouting the fluid medium against the inner surface of the tubing wall for a certain distance thereby expanding the tubing into desired diameter and simultaneously cooling the tubing, and centripetally spouting the second compressed cooling fluid medium against the outer surface of the tubing wall simultaneously with the spout of the first fluid medium so as to sandwich the tubing wall by the both fluid medium for a certain distance. Further, an apparatus for the method comprises an extruder for extruding the thermoplastic material in the form of tubing in semi-molten condition, means for introducing the first compressed cooling fluid medium into the tubing, means for radially spouting the fluid medium against the inner surface of the tubing wall for a certain distance to expand and cool the tubing, means for centripetally spouting the second compressed cooling fluid medium against the outer surface of the tubing wall simultaneously with the spout of the first fluid medium so as to sandwich the tubing wall by the both fluid mediums for a certain distance, and means for continuously winding up the expanded, cooled tubing.

3,742,106
PRODUCTION OF IMPREGNATED ROVINGS

Roger Vernon Price, Lipson, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 23, 1971, Ser. No. 127,302
Claims priority, application Great Britain, Apr. 7, 1970, 16,512/70
Int. Cl. B29b *1/00*; B29f *5/00*
U.S. Cl. 264—131 8 Claims

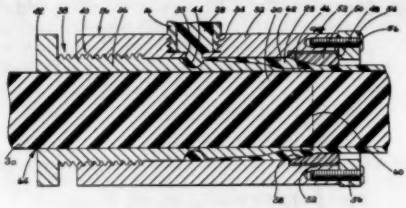


Spreading glass rovings out as they pass through a bed of a powdered thermoplastic and subsequently heating the roving so that the thermoplastic flows to produce a matrix around the fibres.

3,742,107
EXTRUSION PROCESS FOR OPTICAL FIBRES

John J. Hawkins, Santa Ana, Calif., assignor to Poly-Optics, Inc.

Filed Oct. 6, 1969, Ser. No. 863,990
Int. Cl. B29f *3/10*
U.S. Cl. 264—174 6 Claims



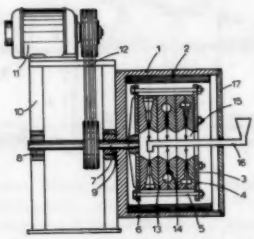
An extrusion method for organic polymer optical fibres in which an elongate, solid body of organic polymer material is moved through a crosshead die wherein organic polymer material is extruded to intimately adhere to the surface of the body, and the clad body is then drawn to an increased length. At all times from adherence of the cladding material to the drawing step, the clad body is maintained at a temperature at or above the softening point of the cladding material or the body material.

3,742,108
Patent Not Issued For This Number

3,742,109
PROCESS FOR THE PREPARATION OF HIGH-MOLECULAR POLYMERIZATION PRODUCTS

Jan W. H. Zijp; Hendrik Bosch, and Antonius Stevenhagen, all of Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Continuation-in-part of Ser. No. 750,741, Aug. 6, 1968, abandoned. This application Oct. 21, 1970, Ser. No. 82,728
Claims priority, application Netherlands, Aug. 9, 1967, 6710935
Int. Cl. B29c *5/04*
U.S. Cl. 264—311 6 Claims



A process for producing polymers by the ionogenic polymerization of lactams is disclosed, wherein the lactam monomer, in the liquid state, mixed with a catalyst and promoter is introduced into a heated mold, which rapidly rotates about an axis outside the mold, via a conduit disposed co-axially with respect to the axis and via a feed channel which extends from the conduit at an angle to the axis and the polymerized, molded object is automatically removed from the mold in a radial direction due to centrifugal force.

3,742,110

METHOD OF SHAPING BRITTLE FOAMED CLAY BY CRUSHING WITH A BLUNT ROLLER

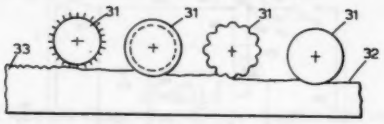
Einar Kjelland-Fosterud, Hosle, Norway, assignor to Sentralinstitutt for Industriell Forskning, Oslo, Norway

Filed May 13, 1971, Ser. No. 142,990

Claims priority, application Norway, May 15, 1970, 1876/70

Int. Cl. B29d 27/00

U.S. Cl. 264—321 6 Claims



A method for forming an object of brittle foam material from foam clay or a similar ceramic building material in the form of a block or element. The objects are formed under controlled, local crushing of the foam material by pressing during the forming one or more tools into the foam material with a force that exceeds the compression strength of the foam material and with a crushing area which multiplied by the compression strength defines a lesser force than that force which causes high enough tensile stress to exceed the tensile strength of the foam material, outside the local parts of the foam material which are crushed. The crushing area is less than 5 per cent of the surface which is formed and may be performed by a number of hammers having a controlled length of stroke. The crushing may be performed by means of one or more clay cylindrical discs which are pressed into the surface of the foam material and then moving and pressing the discs again for forming slits in the material or to divide the object.

ERRATUM

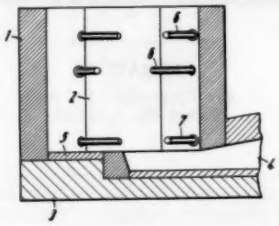
For Class 423—588 see:
Patent No. 3,742,061

ELECTRICAL

3,742,111
METHOD AND FURNACE FOR THE ELECTRIC MELTING OF GLASS

Helmut Pieper, Lohr am Main, Germany, assignor to Ingenieurburo Glasofenbau Nikolas Sorg GmbH & Co. KG., Germany

Filed Jan. 3, 1972, Ser. No. 215,062
Claims priority, application Germany, Jan. 5, 1971, P 21 00 335.0
Int. Cl. C03b *5/02*
U.S. Cl. 13—6 **17 Claims**

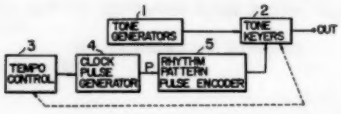


A method for melting glass and an electric melting furnace are disclosed in which upper and lower sets of electrodes are spaced vertically to cause separate flows of glass circulating within adjacent upper and lower planes in a manner limiting glass flow between the respective planes. The set of electrodes in the lower plane are positioned so that rising glass flows from the tips thereof within the lower plane move upwardly to intersect descending glass flows within the upper plane at the interface between the planes thereby limiting glass flow between the planes. Preferably, each of the electrodes in the lower plane is circumferentially staggered relative to the electrodes in the upper plane and the amount of energy applied to glass in the lower plane is greater than the amount of energy applied to the glass in the upper plane.

3,742,112
AUTOMATIC RHYTHM INSTRUMENT

Eisaku Okamoto, Hamakita, Japan, assignor to Nippon Gakki Seigo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Oct. 26, 1971, Ser. No. 192,161
Claims priority, application Japan, Oct. 27, 1970, 45/93983
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.03 **4 Claims**

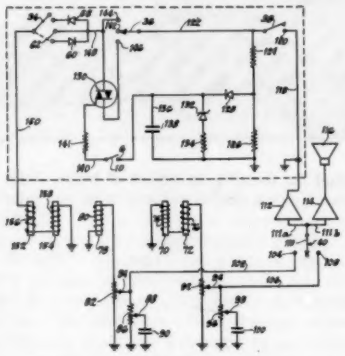


An automatic rhythm instrument comprises a clock pulse generator, a tempo control for controlling the period of the clock pulse, a rhythm pattern pulse encoder receiving the clock pulse and generating rhythm pattern pulses for the selected rhythm, tone generators for generating tone signals, and tone keyers for gating tone signals upon receipt of the rhythm pattern pulses. On each pulse of the rhythm pattern pulses, the tone keyer conducts for a time period determined by a time constant circuit included therein. The tempo control is also connected to the time constant circuit to vary the conducting time lengths of the tone keyers in accordance with the tempo by the tempo control, so that each sounding time length becomes shorter as the tempo becomes faster.

3,742,113
STRINGED MUSICAL INSTRUMENT WITH ELECTRICAL FEEDBACK

Marcus S. Cohen, 134 Woodland Avenue, Winnetka, Ill.

Filed Apr. 28, 1971, Ser. No. 138,213
Int. Cl. G01h *3/00*
U.S. Cl. 84—1.04 **11 Claims**

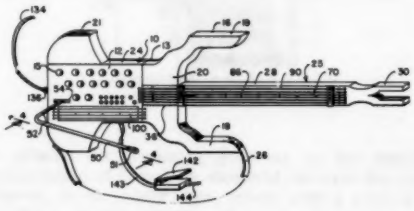


This application discloses a stringed musical instrument including a means responsive to the vibrations of a string as it is plucked or hit, and a means for driving the oscillations of the string electromechanically. The means responsive to the vibration generates an electrical signal which is amplified and supplied to the driving means which causes continued vibration of the string. Means are disclosed wherein the string's vibrations can be sustained for an arbitrary period of time at its fundamental frequency or at higher harmonics thereof, or at a mixture of fundamental and harmonics, producing a sound rich in overtones unique to this instrument. Also disclosed are means whereby the player selects at will which of a plurality of strings will be driven continuously as drones, which will be driven only when played upon, and which will remain undriven. The effect is to make possible the creation of aesthetically pleasing sounds which are entirely different than those created by standard stringed instruments.

3,742,114
GUITAR-LIKE ELECTRONIC MUSICAL INSTRUMENT USING RESISTOR STRIPS AND POTENTIOMETER MEANS TO ACTIVATE TONE GENERATORS

Robert G. Barkan, Box 140, N. Country Road, Miller Place, N.Y.

Filed July 22, 1971, Ser. No. 165,213
Int. Cl. G10h *1/02, 5/04*
U.S. Cl. 84—1.16 **11 Claims**



An electronic guitar-like musical instrument comprises a central flat hollow box-like body with contoured forms extending laterally. A neck extends outwardly of one end of the body. On the neck is a fingerboard formed by a plurality of

electrical resistance strips over which are suspended wire strings. On the box-like body is a control panel provided with controls for the instrument. A short fingerboard is also provided on the control panel and is formed by short electrical resistance strips over which are suspended other wire strings. Tone generators in the box-like body are electrically connected in circuit with the strings, resistance strips and controls on the panel. Potentiometers on the panel control separate tone generators. A vibrato bar extends outwardly of the body for varying pitch of generated tones. Picked notes and chords, sustained and continuously varied notes and chords can be generated by the instrument.

3,742,115

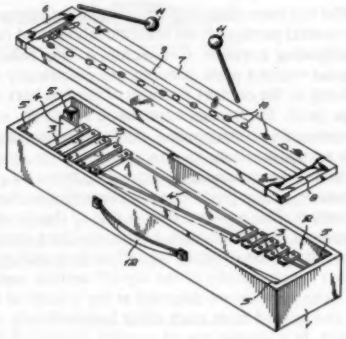
MUSICAL INSTRUMENT AND ASSOCIATED METHOD

Jose Jakubovicz, Praia do Flamengo 386, Rio, Brazil

Continuation-in-part of Ser. No. 841,339, July 14, 1969, Pat. No. 3,641,864. This application Nov. 17, 1971, Ser. No. 199,485

Int. Cl. G09b *15/02*

U.S. Cl. 84—470 **8 Claims**



A musical instrument comprises sonorous bars mounted in sequence of pitch in a hollow, open box. A frame carrying a flexible band of material is mountable on the box in the opening thereof so as to be superimposed on the bars. A musical staff and notes are printed on the band and the notes correspond to the arrangement of the bars. The frame is fitted in the box to provide a singular position of the band in which the notes thereon are aligned with the respective bars therebeneath. By striking each note with a hammer the bar therebeneath is sounded to provide immediate association of the note and its corresponding sound.

3,742,116

TRANSPOSED ELECTRIC CABLE AND METHOD OF PRODUCING THE SAME

Marcel Aupoix, Paris, and Francois Moisson-Franckhauser, Bretigny-sur-Orge, both of France, assignors to Compagnie Generale D'Electricite, Paris, France

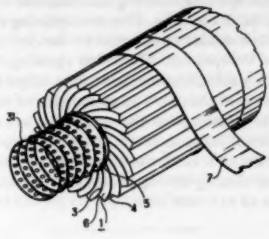
Filed June 19, 1972, Ser. No. 264,085

Claims priority, application France, June 23, 1971, 7122884

Int. Cl. H01b *11/02;* **H01v** *11/00;* **H01b** *13/06*

U.S. Cl. 174—34 **8 Claims**

Transposed electric cable consisting of composite conductive strips arranged so that one of their edges is tangent to a central duct of the cylindrically formed cable. The faces of the



adjacent strips partly overlap.

3,742,117

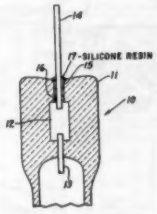
OXIDATION-RESISTANT SEAL

Victor A. Levand, Jr., Lyndhurst, and Richard H. Holcomb, South Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 11, 1972, Ser. No. 252,298

Int. Cl. H01j *5/38*

U.S. Cl. 174—50.64 **3 Claims**



A seal for an electrical device comprising a fused silica member, a refractory metal lead-in conductor and an oxidation preventing barrier of silicone. The conductor has a foil portion attached to an outer lead which is embedded in the fused silica member thereby forming a capillary passage from the ambient air to the foil portion. This capillary passage is effectively closed off from moisture by filling it with a moisture-resistant, heat-resistant polymeric hydrocarbon silicone resin.

3,742,118

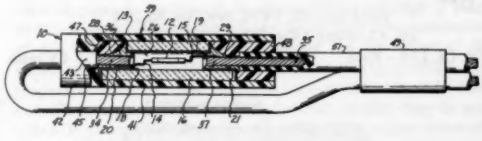
METHODS AND DEVICES FOR ENCLOSING ELECTRICAL COMPONENTS

Kjell E. Myhre, Sierra Madre, and A. Michael Harrison, Pacific Palisades, both of Calif., assignors to Micron Instruments, Inc., Los Angeles, Calif.

Filed Sept. 30, 1971, Ser. No. 185,101

Int. Cl. H05k *5/06*

U.S. Cl. 174—52 S **15 Claims**



Methods and devices for enclosing electrical components include an electrically insulating enclosure having initially a pair of spaced openings. An electrical component is disposed in this enclosure, with one terminal lead of the electrical component being located at one opening and another terminal

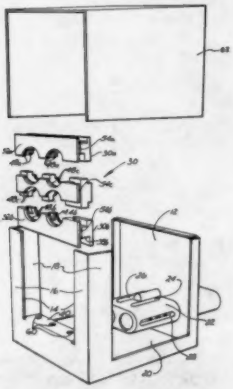
lead of the electrical component being located at another opening of the enclosure. The enclosure is provided with a recess at each opening forming indentations in the side of the enclosure at each opening. The one opening of the enclosure is closed with a solder connected to the one terminal lead of the electrical component. The other opening of the enclosure is closed with a solder connected to the other terminal lead of the electrical component. The quantities of solder employed in closing the openings of the enclosure are also utilized to connect external leads to the terminals of the electrical component. To this end, solder is applied at and through each indentation for closing the openings and connecting each terminal lead to an external lead.

3,742,119

TERMINAL HOUSING

Albert P. Newman, Cincinnati, Ohio, assignor to Empire Products, Inc., Cincinnati, Ohio

Filed Nov. 11, 1971, Ser. No. 197,665
Int. Cl. H02g *3/18*
U.S. Cl. 174—65 R **5 Claims**



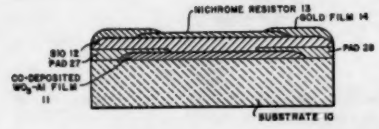
A terminal housing, having an electrical connector integral therewith, into which multiple conductor electrical cables may be brought and joined in electrical contact with said electrical conductor. Means are provided for securing said cables against movement relative to said housing, and to seal said housing against penetration by a liquid. Said means comprising a plurality of resilient members each interengagable with another, and containing hemispherical depressions through which said cables are brought into said housing.

3,742,120

SINGLE LAYER SELF-DESTRUCT CIRCUIT PRODUCED BY CO-DEPOSITION OF TUNGSTIC OXIDE AND ALUMINUM

Frank Z. Keister, Culver City, and Gary S. Smolker, Los Angeles, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 28, 1970, Ser. No. 90,204
Int. Cl. H05k *1/04;* **H01c** *7/00;* **F42c** *13/00*
U.S. Cl. 174—68.5 **1 Claim**



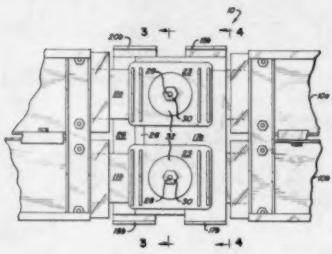
A single layer self-destruct thermite material of tungstic oxide and aluminum simultaneously vacuum deposited on a substrate underlying or overlying a thin film circuit separated therefrom by an electrical insulating thin film to cause thin film circuit destruction when the destruct film is ignited by electrical energy.

3,742,121

TAP-OFF SECTION FOR A FEEDER BUS DUCT RUN

John E. Schmidt, Oxord, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed Feb. 28, 1972, Ser. No. 229,766
Int. Cl. H02g *15/08*
U.S. Cl. 174—72 B **10 Claims**



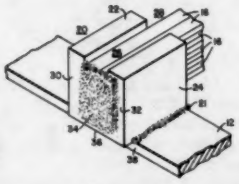
The flat bus bars of the tap-off section are outwardly offset in their central portions from their closely spaced relationship in the adjoining portions. Connectors having relatively wide rectangular contact plate portions are electrically connected respectively to the central portions of the bus bars in a single-bolt type joint. Each connector has a relatively narrow off-center connecting strap portion, the free end portion of which extends perpendicularly to the contact plate portion. The lengths of the perpendicularly extending free end portions of the connecting strap portions vary according to the distances of the contact plate portions from a side of the tap-off section. In a four-pole tap-off section, two connecting strap portions are disposed at the top of the tap-off section and spaced from each other longitudinally of the tap-off section, and two connecting strap portions are disposed at the bottom of the tap-off section and spaced from each other longitudinally of the tap-off section. In a double run of parallel connected feeder bus duct sections, each connector of a tap-off section is electrically connected to a pair of corresponding bus bars connected respectively in the two runs.

3,742,122

ELECTRICAL CONNECTOR

Nicholas G. Blavos; Kou Chi Lin, both of Sharon, and LeRoy E. Dobson, Jamestown, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 12, 1971, Ser. No. 188,301
Int. Cl. H02g *15/08*
U.S. Cl. 174—94 R **8 Claims**



Fixture means for connecting conductor straps to each other or to a bus bar. Partitions of the fixture means form channels into which the conductor straps are placed, with the ends of the straps being flush with the front faces of the partitions. A conducting material is welded across the partition faces and the conductor strap ends to provide a current path

from the conductor straps to the partitions. The fixture means is welded to the bus bar to provide a low resistance current path between the bus bar and the fixture means.

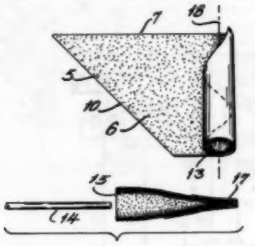
ERRATUM

For Class 174—102 see:
Patent No. 3,742,363

3,742,123
INSULATOR FOR ELECTRIC WIRES

LeRoy E. Haub, Jr., 4401 Clarmont Court, Bridgeton, Mo.

Filed Nov. 25, 1970, Ser. No. 92,667
Int. Cl. H01r 5/12; H01b 17/00
U.S. Cl. 174—138 F 5 Claims

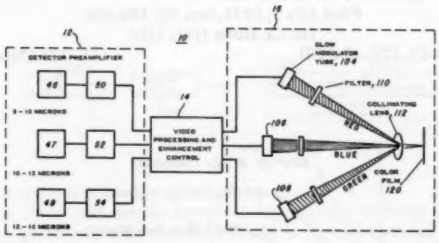


An insulator for insulating wires, said insulator being tubular in shape with a longitudinal opening therein for receiving one or more wires, said insulator adapted to cover and insulate the wire or wires and/or the ends thereof, said insulator being deformable under pressure and having pressure sensitive adhesive material on the inside surface so that said insulator adheres to said wire or wires and to itself upon sufficient deformation.

3,742,124
COLOR INFRARED DETECTING SET

Jesse C. Wilson, Richardson; Melvin J. Borel, Carrollton, and Charles B. Weaver, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 16, 1971, Ser. No. 171,838
Int. Cl. H04n 9/02
U.S. Cl. 178—5.2 R 24 Claims

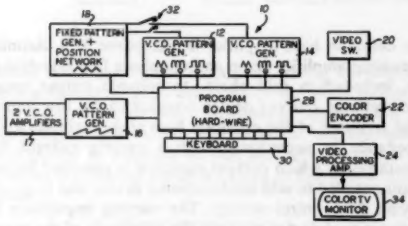


A color infrared detecting set is provided which utilizes the variation of emissivity of objects to add the effect of color to the sensing and presentation format. With color added to brightness a large number of shade combinations are possible and a large visible distinction between objects is realized. Color image signals are obtained by infrared energy passing through filters of different wavelengths (for a range of detection interest) to corresponding detectors which convert the infrared energy to electrical signals. The electrical signals are amplified, weighted and summed in one channel to produce a brightness signal, and processed in another channel to produce a plurality of color-difference signals. The brightness signal drives a plurality of light modulators, and each light modulator receives a color perturbation signal derived from the color-difference signals to obtain a color signal representative of one of the tristimulus values. The color signals are combined to produce an image of brightness equal to a black and white image, but having an apparent hue.

3,742,125
COLOR VIDEO ABSTRACT SYNTHESIZER

Eric J. Siegel, New York, N.Y., assignor to Electronic Visions, Inc., New York, N.Y.

Filed June 11, 1971, Ser. No. 152,349
Int. Cl. H04n 9/02
U.S. Cl. 178—5.2 R 18 Claims



An apparatus for synthesizing a color video abstract signal having a selectable color content characteristic and geometric form characteristic by a programmable predetermined mixing of the outputs of a plurality of pattern generators and a pseudo chrominance signal. The pseudo chrominance signal has variable hue and saturation characteristics, the color content characteristic being dependent upon the hue and saturation characteristics. In addition, the pattern generators are capable of providing a plurality of different selectable predetermined waveform configurations which configurations are, in turn, capable of providing at least two different geometric form characteristics. Both the color content characteristic and the geometric form characteristic of the resultant color video abstract signal are capable of being varied in a predetermined fashion. The pattern generator may be synced to a submultiple of the vertical or horizontal rate to provide a color video abstract display which is stable but may be electronically positioned on the display screen. In addition, the mixing of the various pattern generators is accomplished through a video switch in accordance with a preprogrammed interconnection of the various devices. By controlling the operation of the video switch, different geometric form characteristics with respect to both size and shape as well as zoom-in and zoom-out effect for the resultant video abstract display may be provided. Furthermore, a strobe effect for the resultant video abstract display may also be provided wherein the polarity of the color video abstract signal is reversed at a predetermined frequency so as to vary the signal from negative to positive and vice versa. In addition, a keyboard is provided for intermittently varying the preprogrammed interconnection of the devices so as to provide a different color video abstract display.

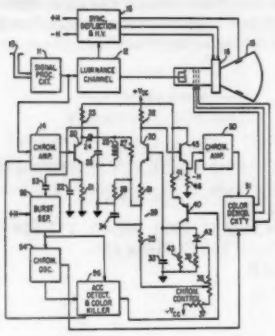
3,742,126
AMPLITUDE CONTROL CIRCUITS

Robert Dale Altmanshofer, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 829,510, June 2, 1969. This application Apr. 28, 1971, Ser. No. 138,294

Int. Cl. H04n *9/48*

U.S. Cl. 178—5.4 R **5 Claims**



A common base amplifier is interposed in a chrominance processing amplifier chain and couples a first selective amplifier, included in said chain, to suitable output means. A unidirectional current device coupled to the low impedance input terminal of the common base stage, exhibits a varying impedance in accordance with a varying current flowing therethrough, which current variation is provided by suitable means coupled to said unidirectional device and responsive to varying d.c. control voltags. The varying impedance of the unidirectional device controls the amplitude of the sggnal applied from the first selective amplifier via the common base stage to the output means.

3,742,127
METHOD FOR RECORDING A PAL COLOR TELEVISION SIGNAL

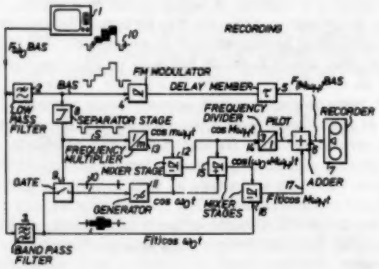
Walter Bruch, Hannover, Germany, assignor to Licentia Patent-Verwaltungs-GMBH, Frankfurt am Main, Germany

Filed Sept. 28, 1971, Ser. No. 184,427

Claims priority, application Germany, Oct. 2, 1970, P 20 48 501.2

Int. Cl. H04n *5/78, 9/32*

U.S. Cl. 178—5.4 CD **2 Claims**



In the recording of a PAL color television signal wherein the modulated chrominance subcarrier frequency is shifted by 25 Hz with respect to a frequency having a quarter-line frequency offset with respect to the horizontal sweep frequency and is recorded in this form in a frequency band outside that of the luminance signal, the chrominance subcarrier is so shifted that in its recorded form it retains the 25 Hz shift and quarter-line frequency offset.

3,742,128
MANUAL CHROMINANCE SATURATION CONTROL CIRCUIT

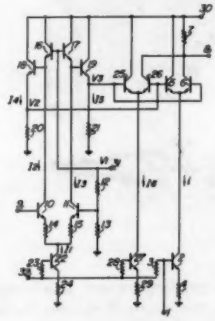
Shuzo Wakai, Kyoto, and Hitoshi Sugano, Takatsuki, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Feb. 25, 1972, Ser. No. 229,331

Claims priority, application Japan, Mar. 5, 1971, 46/12069; Mar. 8, 1971, 46/12565

Int. Cl. H04n *9/48*

U.S. Cl. 178—5.4 MC **3 Claims**



A chrominance saturation control circuit to permit indirect or D-C mode control of chrominance saturation. The connection between the chrominance saturation control knob in a television receiver and the chrominance saturation control circuit can be achieved through wiring which transmits only D-C voltage. With this DC controlled chrominance saturation control, the television set may be made less susceptible to external interference compared to the case of using a shielded wiring for directly controlling the chrominance saturation.

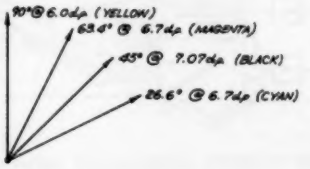
3,742,129
APPARATUS AND METHOD FOR GENERATING HALFTONES FOR IMAGE REPRODUCTION

Webster C. Roberts, Mayfield Heights, and Alan M. Foster, South Euclid, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed July 7, 1971, Ser. No. 160,406

Int. Cl. H04n *1/46, 5/84*

U.S. Cl. 178—5.4 CD **25 Claims**



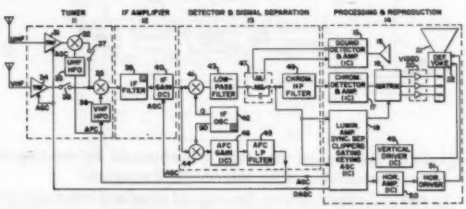
Apparatus and method are provided for forming halftone reproductions of continuous tone color images wherein for

each color component of an image a halftone pattern is formed with a plurality of dot characters. The dot characters vary in size with the tone level of the image to be reproduced and are spaced from each other in dependence upon the color component being reproduced in halftone copy.

3,742,130
TELEVISION RECEIVER INCORPORATING SYNCHRONOUS DETECTION

Willaim Peil, N. Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,641
Int. Cl. H04n 9/50; H04b 1/16, 1/68
U.S. Cl. 178—5.4 SD **19 Claims**

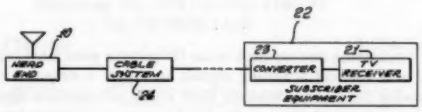


A receiver for the reception of black and white or color television signals is disclosed which employs synchronous signal detection. Employing a highly linear synchronous detector of appropriately large bandwidth permits all portions of the signal to be detected at the original levels in the same detector without mutual interference. The detected portions are then separated at base band after detection by simplified filters. A single wide band lumped filter passing the whole channel at an intermediate frequency may be employed for interchannel separation prior to detection. The design is intended for either discrete or monolithic solid state fabrication, the latter form permitting highly desirable realizations of critical circuits at low cost.

3,742,131
FREQUENCY INTERFERENCE REDUCTION IN CABLE TELEVISION SYSTEMS

Gaylord G. Rogeness, Santa Ana, Calif., assignor to Anaconda Wire and Cable Company, New York, N.Y.

Filed July 2, 1971, Ser. No. 159,119
Int. Cl. H04n 7/10
U.S. Cl. 178—5.6 **10 Claims**

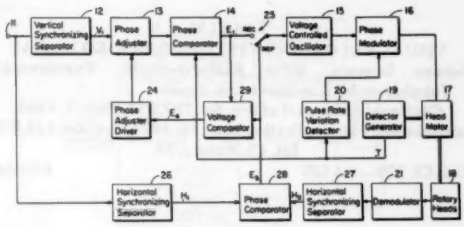


A cable television system includes:
a. head end means for receiving multiple channel programming with standard 1.5 MHz spread between adjacent channel picture and sound carriers, and for shifting said bands to provide greater than 1.5 MHz spread therebetween on the distribution cable,
b. a converter having an input from the cable and an output operatively connectible with the television receiver, the frequency spread between adjacent channel picture and sound carriers at said input being substantially greater than 1.5 MHz, and
c. the converter including circuit means for selecting a desired channel on the cable and converting the frequencies associated with that channel to a predetermined output frequency band.

3,742,132
DRUM SERVO SYSTEM OF A VIDEO TAPE RECORDER FOR AN ELECTRONIC EDITING

Isao Sanguu, and Tatsuo Konishi, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 20, 1971, Ser. No. 145,163
Claims priority, application Japan, May 23, 1970, 45/44321
Int. Cl. G11b 27/08
U.S. Cl. 178—6.6 P **7 Claims**

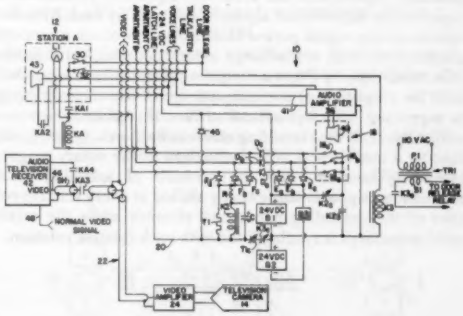


A drum servo system for electronic editing of television signals in a video-tape recorder in which the phase difference between a previously recorded reproduced signal, and a new recording signal is detected. The phase of the reproduced signal is shifted in response to that detection such that the phase of the reproduced signal is locked to that of the recording signal.

3,742,133
MONITORING SYSTEM

Joseph L. O'Sullivan, Milton, Mass., assignor to Seaboard Systems, Inc., Randolph, Mass.

Filed Sept. 15, 1971, Ser. No. 180,804
Int. Cl. H04n 7/02, 7/18
U.S. Cl. 178—6 **18 Claims**



The system is for use in an apartment house or other multiunit dwelling and generally includes a central station which is preferably in the lobby of the apartment house and a plurality of unit stations, one being associated with each unit of the apartment house. The central or lobby station includes a plurality of manually actuable switches, one identifying each apartment unit, a television camera and a

speaker/microphone arrangement for communicating with an occupant of the apartment house. Each unit station similarly includes a corresponding speaker/microphone arrangement, along with a lobby door release switch, a television receiver and a talk/listen switch. In accordance with the invention circuitry including relay and delay means are also located in the central station and unit stations.

When one of the switches in the lobby is depressed and the television receiver in the corresponding unit is on, the video signal from the lobby camera automatically overrides the video signal of the tuned-in station regardless of which station is tuned-in and the occupant can immediately observe the lobby area to determine whether or not to actuate the door release switch.

3,742,134

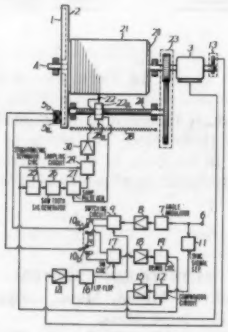
VISUAL RECORDING SYSTEM FOR VIDEO SIGNAL

Saburo Uemura, 4394 Kamariv-machi, Kanazawa-ku, Yokohama-shi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 757,034, Sept. 3, 1968, abandoned. This application Mar. 16, 1971, Ser. No. 124,879

Int. Cl. H04n *1/28*

U.S. Cl. 178—6.6 DD **8 Claims**



A system for the visual recording of a video signal records one field or frame of the video signal on a rotary magnetic recording medium, such as a magnetic disk, and then repeatedly reproduces the recorded signal. A portion of the repreatedly reproduced signal is sampled at each horizontal synchronizing signal period thereof, and controls a recording element, such as a discharge electrode, which discolors or otherwise visually alters a recording paper in correspondence with the amplitude of the sampled signal. The recording paper is supported on a cylindrical surface for relative movement with respect to the recording element both axially and in rotation by a mechanical interconnection to the rotary magnetic recording medium, and the position of sampling of the reproduced signal is sequentially shifted at every relative rotation of the recording paper and element while the relative axial movement is synchronized with such relative rotation.

3,742,135

TELEVISION SYSTEMS

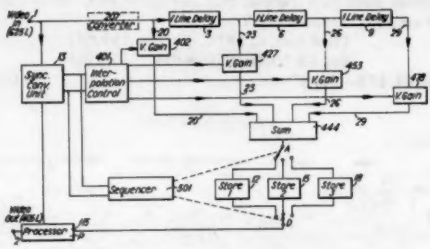
John Lewis Edwin Baldwin, Croydon, England, assignor to Independent Television Authority, London, England

Filed Mar. 22, 1971, Ser. No. 126,538

Int. Cl. H04n *7/00*

U.S. Cl. 178—6.8 **20 Claims**

Video input signals of a field of a first line standard are converted to a second line standard, having a reduced number of lines, via an intermediate line standard. The input signals are passed through one or more delay devices so that the picture information in corresponding parts of adjacent lines is available at any instant. By interpolation of this information there are produced lines of an intermediate standard which are stored. The intermediate standard contains the same number of lines as the first but the interpolated information is contained in the number of lines of the second standard. The excess lines of the intermediate standard may be blank. Output



signals of the second standard are obtained by reading-out only the wanted lines of the intermediate standard.

In a modification, where the second standard has more lines than the first, lines are added when reading-out the intermediate standard.

The apparatus is preferably of the digital type for all steps of the conversion. The novel use of digital shift registers as delay devices and storage devices is especially convenient and economic.

3,742,136

PICTURE GENERATING UNIT OF THE SCANNING TYPE

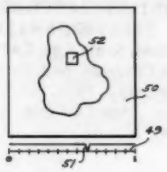
Tore Bertil Reinhold Olsson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Mar. 15, 1971, Ser. No. 124,209

Claims priority, application Sweden, Mar. 26, 1970, 4274/70

Int. Cl. H03k *5/20*; **H04n** *5/22, 7/18*

U.S. Cl. 178—6.8 **12 Claims**

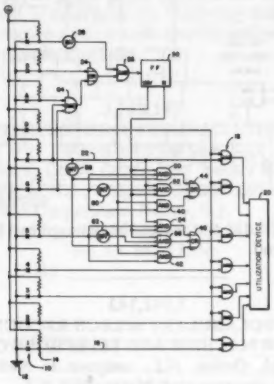


A scanning device such as an IR camera generates horizontal and vertical scanning signals to direct a detector over a viewing field. The detector then emits information signals in accordance with the amplitude of a property, such as temperature, at points within the viewing field. The scanning and information signals are fed to a display device to give a visual indication of the temperature distribution of the viewing field. In addition a selective device through the agency of the scanning signals controllably selects a portion of the viewing field for detailed study. The selective device feeds signals to the display device to visually demarcate the selected area and also selects the information signals in that area for amplitude measurement. The measure of the amplitude is converted to a form suitable for visual display so that there is simultaneously displayed a representation of the field of view with the selected area demarcated and an indication of the temperature within the selected area.

3,742,137
CASE SHIFTING CODE GENERATOR

Stuart M. Garland, Morton Grove, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed July 29, 1970, Ser. No. 59,217
Int. Cl. H04l 15/12
U.S. Cl. 178—17 C 1 Claim

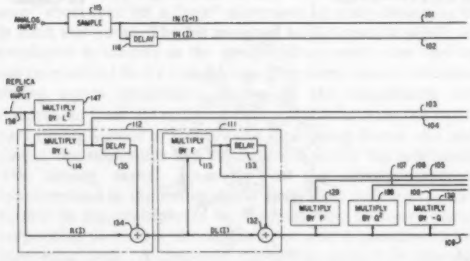


A system for case shifting the binary coded representations of the alphanumeric and figure characters of the American Standard Code for Information Interchange (ASCII) comprising three gates on each of the fifth and sixth code levels with one of the three gates of each such level energized to pass the normal code generated by an ASCII code generator in the absence of a shift command. The other two AND-gates of each of the fifth and sixth levels are energized upon the occurrence of a normal shift command. One of these other two AND-gates in each level passes a normal fifth or sixth level code signal, and the other of these two AND-gates passes an inverted fifth or sixth level signal. In the presence of a shift command in combination with a "1" state signal in the seventh level, the inverted sixth-level AND-gate and the normal fifth-level AND-gate are energized. However, a "0" state signal in the seventh level causes the normal sixth-level AND-gate and the inverted fifth-level AND-gate to be energized. An additional AND-gate monitors the sixth and seventh levels and an auxiliary shift contact. Upon concurrence of "1" state signals in both the sixth and seventh levels and the closure of the auxiliary shift contact, the additional AND-gate delivers a shift signal to the normal shift apparatus of the circuit in order to case shift only the alphabetic characters.

3,742,138
PREDICTIVE DELAYED ENCODERS

Cassius Chapin Cutler, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 30, 1971, Ser. No. 176,131
Int. Cl. H03k 13/02
U.S. Cl. 178—68 8 Claims

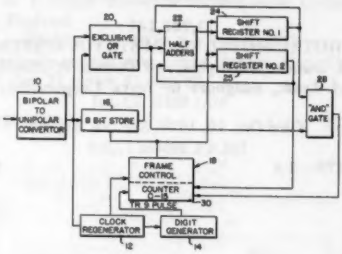


In a feedback type encoder, predictive delay apparatus allows for the calculation of estimated encoding error one sampling period in advance of the sample being encoded. Each of a plurality of combinatorial means assembles a predicted error signal under conditions of hypothetical prospective output signals. In the embodiment shown, a one bit encoder is afforded exponential adaptation and double integration facilities in its feedback circuitry. The net result is a superior response to rapid directional changes in input analog signals with a substantial improvement in operational stability.

3,742,139
FRAMING SYSTEM FOR T-CARRIER TELEPHONY

Michael A. Bochly, 35 Nory Lane, Rochester, N.Y., and Paul K. Kavanaugh, 528 Countryside Lane, Webster, N.Y.

Filed Jan. 20, 1971, Ser. No. 108,005
Int. Cl. H04l 7/00
U.S. Cl. 178—69.5 R 3 Claims

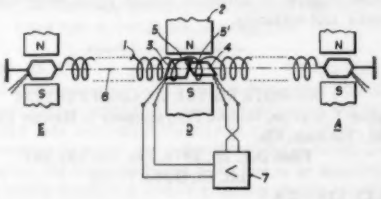


A framing system for the receiver in a T-carrier system of the kind in which framing signals are transmitted only in alternate frames. A group of eight time slots is fed to a store and compared with the corresponding eight time slots two frames later. If there is no framing relationship, the circuit steps to the next succeeding group of eight time slots and repeats the comparison. If the timing relationship is found, further comparisons are made at intervals of two frames each. If the framing relationship persists, the receiver is synchronized, if not, the circuit steps to the next group of eight time slots. The process is iterative until the framing relationship is found. A half adder controls a pair of eight stage shift registers to detect candidate time slots and framing.

3,742,140
ARRANGEMENT FOR DAMPING TORSIONAL OSCILLATIONS INDUCED IN A HELICAL SPRING, PARTICULARLY IN ARTIFICIAL REVERBERATION DEVICES

Bernhard Weingartner, Vienna, and Werner Fidi, Baden Bei Vienna, both of Austria, assignors to AKG Akustische u. Kino-Gerate G.m.b.H., Vienna, Austria

Filed Apr. 28, 1971, Ser. No. 138,208
Claims, priority, application Austria, May 19, 1970, A 4486/70
Int. Cl. H02k 33/18
U.S. Cl. 179—1 J 10 Claims



A spring system, particularly for an artificial reverberation device, includes a helical spring in which torsional oscillations are induced, and a moving coil system connected to the helical

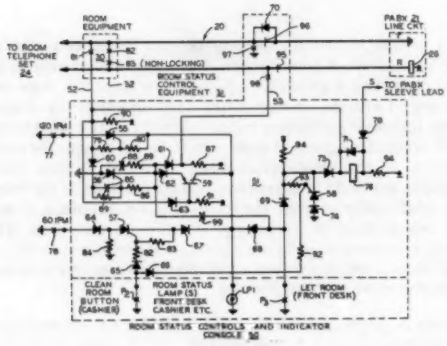
spring for damping the oscillations electromechanically. The moving coil system includes two electrically and magnetically decoupled windings disposed in a permanent magnetic field with one winding being electrically connected to the input of an amplifier and the other winding being electrically connected to the amplifier output. The two windings are mechanically interconnected and arranged in tandem along the turn axis of the helical spring, with the axes of the two windings being mutually perpendicular to each other. The two windings may be mechanically interconnected in directly contiguous arrangement to form a rigid unit, or may be spaced apart and resiliently interconnected by a resilient coupling, such as a metal strip. The moving coil system may serve either as a driving system, for inducing torsional oscillations in the helical spring, or as a pick-up system, for detecting such oscillations. Preferably, the two windings are rectangular, but other configurations may be used with some decrease in the quality.

3,742,141

HOTEL/MOTEL ROOM STATUS SYSTEM

Robert H. Duncan, Memphis, and Thomas P. Miller, Jackson, both of Tenn., assignors to Terra Corporation, Jackson, Tenn.

Filed Oct. 19, 1970, Ser. No. 81,988
Int. Cl. H04m *1/00*
U.S. Cl. 179—2 A **14 Claims**



An electronic circuit is assigned to each room, in a hotel or motel, and selectively operated from a central control desk to light a lamp assigned to the corresponding room and thereby indicate whether it is vacant or rented. Various interruption rates may be used cause the lamp to flash in different manners, depending upon the current status of the room (i.e. unmade, being cleaned, or ready for occupancy). The electronic circuit may also be connected into computers or advance reservation systems in order to automate billing, room assignment, maintenance, and servicing.

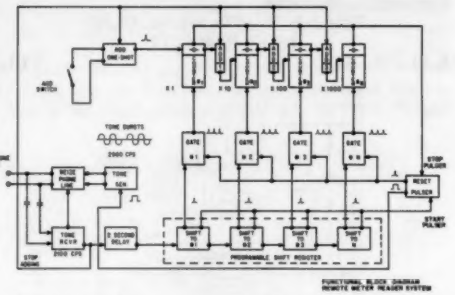
3,742,142

REMOTE METER READER SYSTEM

Stephen J. Martin, Miami, Fla., assignor to Hunter Electronics, Inc., Hialeah, Fla.

Filed Dec. 28, 1970, Ser. No. 101,997
Int. Cl. H04m *1/00*
U.S. Cl. 179—2 A **8 Claims**

A method and apparatus by which a repeating event type meter, such as kilowatt hour meters as used by power companies, traffic counters as used by cities and counties, fuel meters showing number of gallons used, and other similar devices can be interconnected to a telemetering unit, and by remote control from a distant end, either through telephone lines, AC



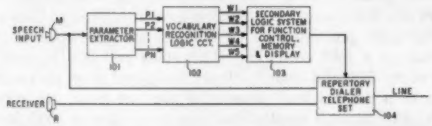
carrier lines or radio, the accumulated count can be displayed at the remote end.

3,742,143

LIMITED VOCABULARY SPEECH RECOGNITION CIRCUIT FOR MACHINE AND TELEPHONE CONTROL

Mebenin Awipi, Ocean, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 1, 1971, Ser. No. 119,551
Int. Cl. G10l *1/02*
U.S. Cl. 179—1 SA **3 Claims**



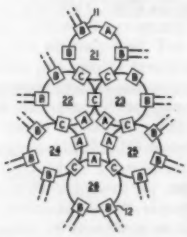
Machine or telephone control by voiced commands is attained by translating the electrical signal derived from an acoustic signal or spoken word into a plurality of binary parameter waveforms each indicating sequentially the instantaneous condition or measurement of the corresponding parameter in terms of its being on either one side or the other of a preselected threshold or norm. A command output signal is generated only when the waveforms are found to have a particular sequence of binary parameter combinations that is acceptable to a sequential logic recognition circuit.

3,742,144

INTERCONNECTED LOOP DIGITAL TRANSMISSION SYSTEM

Lane Howard Brandenburg, New York, N.Y.; Bhaskarpillai Gopinath, Chatham, N.J., and Robert Paul Kurshan, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1971, Ser. No. 201,744
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 AL **10 Claims**



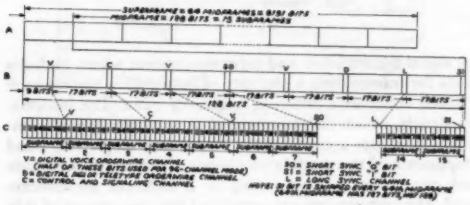
A digital communication loop system wherein transfers of signal message blocks between interconnecting loops are only

made when a Hamming distance criterion is satisfied. Appended to each message block is a loop destination address code comprised of a first ordered concatenation of two binary sequences. Stored at each interconnecting loop transfer point is an address code identifying one of said interconnecting loops, comprised of a second ordered concatenation of two binary sequences. The product of the first and second ordered codes is formed to determine the Hamming distance between the loop destination address code and the address code identifying the interconnecting loop.

3,742,145
ASYNCHRONOUS TIME DIVISION MULTIPLEXER AND DEMULTIPLEXER

James M. Clark, Cedar Grove, and Robert H. Haussmann, Wayne, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 17, 1972, Ser. No. 244,753
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 BA **22 Claims**

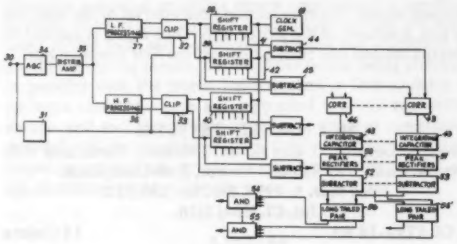


There is described an asynchronous multiplexer and demultiplexer that operates on the basis of a stuff only technique. The multiplexer includes a different elastic store for each of the asynchronous input PCM data groups. Each of the elastic stores include a buffer register whose writing clock is synchronous with the asynchronous group input bit rate clock and a read clock which is synchronous with the bit rate of a synchronous data format employed for multiplexing the asynchronous group inputs. Each of the elastic stores produce a stuff request signal when the phase difference of the read and write clocks is equal to a given period, in numbers of bit periods. A common stuff control circuit samples the stuff requests and provides a control signal to inhibit the read clock to add or stuff a single stuff bit to the associated group data for each stuff request. Timing signals generated from a reference oscillator define the synchronous data format which includes 64 midframes within a superframe with each of the midframes including 15 subframes. Odd numbered ones of the subframes include 9 data bits and even numbered ones of the subframes include 8 data bits. The 9th data bit of the odd numbered subframes provide an overhead channel for transmitting digital voice orderwire, digital data orderwire, control words, a "zero" short sync bit, a "one" short sync bit and a long sync bit in each midframe. The bit assigned to the control words are employed to identify at the demultiplexer where the stuff bit has been added to the data format. The demultiplexer includes timing signal generators driven by the superframe rate receovered from the received data signal to provide the necessary timing signals to identify the supergroup frame, the midframe, the subframes and the data bits within the subframes. The timing signal generator in the demultiplexer is synchronized to the timing signal generators defining the data format in the multiplexer by a superframe recovery circuit responsive to both a short sync code and a pseudo-random long sync code. A common destuffing control is provided responsive to the code word identifying the presence or absence of a stuff bit to destuff the identified group data and thereby return the stuffed multiplexed group data to asynchronous group data as originally applied to the elastic stores of the multiplexer. The demultiplex includes for each asynchronous group data a different elastic store wherein the write clock is controlled by the recovered supergroup bit rate and the read clock is conjrolled at the group or midframe rate provided by the timing signal generators. The destuff control from the common destuff control circuit controls the write counter to cause destuffing of the associated one of the stuffed group data. A heterodyne type phase locked loop is employed in conjunction with each of the elastic stores to remove jitter from the destuffed group data.

3,742,146
VOWEL RECOGNITION APPARATUS

Edward Arthur Newman, Oxshott; Brian Edward Pay, Wraysbury, and David Roger Manning, Morden, all of England, assignors to National Research Development Corporation, London, England

Filed Oct. 20, 1970, Ser. No. 82,348
Claims priority, application Great Britain, Oct. 21, 1969, 51,588/69; Oct. 21, 1969, 51,589/69
Int. Cl. G10l *1/04*
U.S. Cl. 179—1 SA **22 Claims**



The recognition of signals having specific periods is described particularly in relation to recognizing vowels. Characteristic frequencies in vowels are recognized by circuits which delay the input signals for an interval related to a frequency to be recognized, correlate the delayed signals with undelayed input signals and integrate the resultant over a short period comparable with the duration of the vowel sound. The magnitude and sign of the integrated signal indicates whether the required signal is present. In order to deal with speech an incoming signal is first passed to a special form of AGC circuit and then divided into low and high frequency components. The presence of characteristic frequencies in these components is determined by the technique described above, and logic circuits indicate what combinations of frequencies and thus what vowels are present.

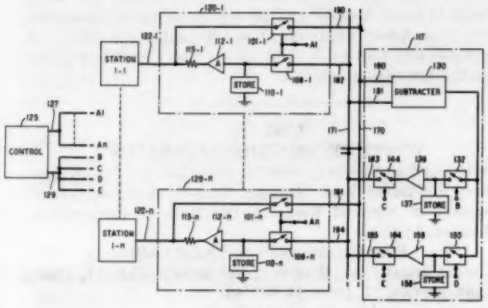
3,742,147
TIME DIVISION COMMUNICATION SYSTEM UTILIZING TIME SEPARATION SWITCHING

Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1972, Ser. No. 224,779
Int. Cl. H04j *3/00*
U.S. Cl. 179—15. AT **11 Claims**

A time division communication system wherein a plurality of time slots occurs in repetitive cycles and each time slot is divided into two time intervals includes a plurality of lines, first and second common buses, and a signal transfer network connected between the common buses. Each line as an associated line circuit which includes a store for storing signals received from the first common bus, means for coupling the stored signal to the connected line and means for selectively connecting the line to the second common bus. The signal transfer network is operative in a first time interval of a selected time slot to receive a sample of the first line circuit stored signal via

the first common bus, to receive a sample of the signal on the first line via the second common bus, to form a signal corresponding to the difference in the samples, and to store the



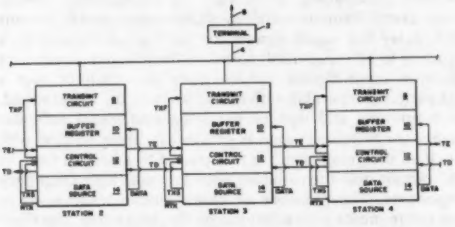
difference signal. During a second time interval of the selected time slot, a sample of the stored difference signal is applied to a selected second line circuit store via the first common bus.

3,742,148

MULTIPLEXING SYSTEM

Kenneth S. Ledeen, 71 Elm Street, Holliston, Mass., and William M. Kahn, 189 Summit Avenue, Brookline, Mass.

Filed Mar. 1, 1972, Ser. No. 230,912
Int. Cl. H04j *3/16*
U.S. Cl. 179—15 BA **14 Claims**



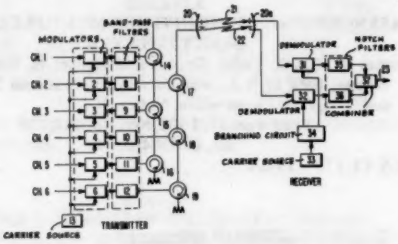
A system for operatively connecting, one at a time, a plurality of sequentially arranged identical data input stations to a single terminal for data transmission. Each station contains a control circuit which is associated with it and each control circuit is connected to those control circuits associated with the next preceding and next succeeding stations. A signal is applied to each control circuit when data is to be transmitted from its associated station to thereby condition that station for transmission. Each control circuit operates to disable from transmitting its station's next succeeding station when either its own station is conditioned for transmission or when it itself is disabled by the control circuit of the next preceding station. Each control circuit also operates to disable from transmitting the next preceding station when it itself is disabled by the control circuit of the next succeeding station or when its own station is conditioned for transmission and it is not disabled by the next preceding control circuit. In the unusual situation where two stations are conditioned for transmission at exactly the same time, the succeeding station is given priority and its control circuit is able to disable the preceding station.

3,742,149

FREQUENCY DIVISION MULTIPLEX MICROWAVE COMMUNICATION SYSTEM USING POLARIZATION DIVISION MULTIPLEX TECHNIQUE

Hiroshi Yoshida, and Kimio Narahara, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Apr. 30, 1971, Ser. No. 139,164
Claims priority, application Japan, May 6, 1970, 45/38821
Int. Cl. H04j *1/08*
U.S. Cl. 179—15 FS **4 Claims**



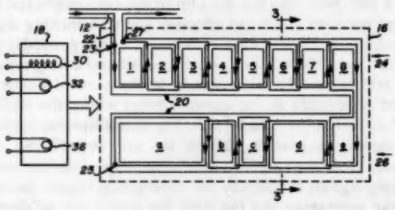
A signal transmission and reception system which includes means for transmitting a plurality of information signals each of which occupies a different frequency band. The information signals, which may correspond to television signals, amplitude-modulate a carrier wave to produce single side band components of the modulated carrier wave, each single side band component corresponding to a different information signal. The components are combined into two groups of side band components each group being comprised of side band components corresponding to alternate, adjacent information signal frequency bands. The two composite signals are transmitted by transmitter means which uniquely polarize each composite signal with respect to the other. Receiving means, responsive to each of the polarized signals, detect the composite signals and apply each to a different demodulator. The demodulated signals are combined to reconstruct the information contained in the plurality of transmitted information signals.

3,742,150

INDUCTIVELY COUPLED DATA COMMUNICATION APPARATUS

Leigh E. Sherman; Walter P. Adams, and Lynn D. Crawford, all of San Jose, Calif., assignors to Mobility Systems, Inc., Santa Clara, Calif.

Filed Apr. 28, 1971, Ser. No. 138,194
Int. Cl. H04b *5/00*
U.S. Cl. 179—82 **15 Claims**



Data communication apparatus utilizing a current source, a first set of closely adjacent transmitting coils energized by that current source for developing a first series of magnetic fields and second set of closely adjacent transmitting coils energized by that current source for developing a second series of magnetic fields which have a particular relationship to the first series of magnetic fields, commensurate with the data to be

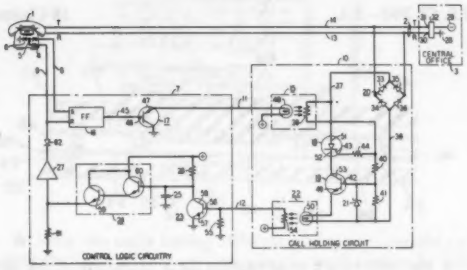
communicated. Carried by a vehicle passing over the transmitting coils is a magnetic field sensing means for each set of coils each of which develops an output signal for comparison with one another when the sensing means is at a preselected position with respect to each transmitting coil.

3,742,151

COMMUNICATION CALL HOLDING AND SUPERVISING CIRCUIT

Peter Gade Ruether, Denver, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1971, Ser. No. 209,658
Int. Cl. H04m *3/22*
U.S. Cl. 179—99 **17 Claims**



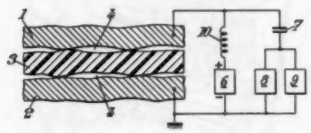
An electronic call holding circuit including a PNPN switch and an NPN transistor in a constant current configuration across a telephone line is disclosed. A pair of photoresistive devices isolate the line from logic control circuitry and provide for the coupling of hold commands to the PNPN switch and for the detection of call supervisory signals on the line following the application of a constant current variable impedance hold condition across the line.

3,742,152

ULTRASONIC TRANSDUCERS

Jacques Lewiner, Saint Cloud, and Pierre Biquard, Paris, both of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar), Courbevoie, France

Filed Nov. 22, 1971, Ser. No. 200,795
Int. Cl. H04r *19/00*
U.S. Cl. 179—111 E **2 Claims**



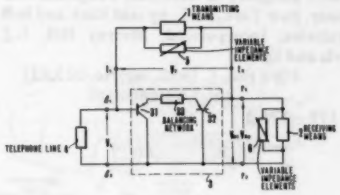
A condenser has two plates capable of vibrating, separated from one another by a thin electrostatically charged dielectric. One of the plates is in contact with the propagation medium of the ultrasonic waves. The two plates are connected to an electrical emitter and/or receiver. The dielectric is permanently charged by prior treatment and an external DC voltage is applied between the plates in reverse sense to that used for charging the dielectric. The two electrostatic fields so created are added in effect.

3,742,153

TELEPHONE CIRCUIT FOR SIDETONE BALANCE AND AUTOMATIC TRANSMISSION LEVEL ADJUSTMENT

Ryoichi Matsuda, Musashino; Masaaki Terai, Hoya, and Yasuo Hojyo, Sayama, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed June 29, 1971, Ser. No. 157,985
Claims priority, application Japan, Sept. 3, 1970, 45/76677
Int. Cl. H04m *1/58*
U.S. Cl. 179—81 A **9 Claims**



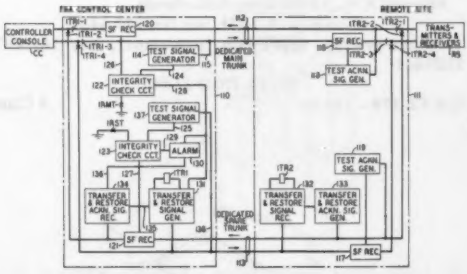
In a telephone circuit comprising a telephone line, transmitting and receiving means connected to the telephone line, there are provided amplifier means constructed to produce a current which is proportional to the input voltage but not related to the load and connected between the telephone line and the receiving means, the amplifier means being connected in parallel with the transmitting means, a first variable impedance element connected in parallel with the transmitting means, and second variable impedance element connected in parallel with the receiving means, the first and second variable impedance elements varying in accordance with the DC voltage condition of the telephone line.

3,742,154

CONTINUOUS INBAND TESTING OF TRUNKS WITH AUTOMATIC TRUNK SUBSTITUTION UPON DETECTING A DEFECTIVE TRUNK

Richard Henry Bidlack, Boonton, N.J.; William John McKelvey, Boulder, Colo., and James Alan Rezelman, Spring Lake Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1971, Ser. No. 214,139
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 **8 Claims**



The integrity of a dedicated trunk is checked by providing equipment for periodically transmitting inband test signals in both directions over the trunk. Each of the test signals is a 2,400 Hz signal periodically transmitted over the trunk from the near end. Equipment at the far end responds by returning a 2,600 Hz acknowledgment pulse over the trunk. Filters at both ends of the trunk prevent interference of the test signals with the voice frequency communications thereon. A counter at the near end of the trunk is initialized for each test signal transmitted to the far end and is blocked from counting by each acknowledgment signal returned over the trunk. Upon

transmitting two successive test signals to the far end and not receiving acknowledgment signals, the counter is incremented to the count of two and controls an automatic transfer of the voice frequency communications on the dedicated trunk to a spare trunk the integrity of which is similarly checked.

3,742,155

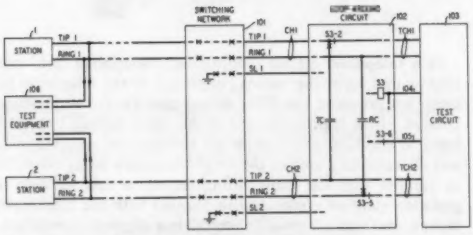
CALL SOURCE VERIFICATION ARRANGEMENT

Robert Grainger Buck, Farmington, Mich.; John Joseph Deltuvia, Sr., Jackson, N.J., and Albert Hunter Spinks, Burlington, N.C., assignors to American Telephone and Telegraph Company, New York, N.Y., by said Buck and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Deltuvia and Spinks

Filed Feb. 1, 1972, Ser. No. 222,521

Int. Cl. H04b *3/46*

U.S. Cl. 179—175.3 **17 Claims**



An arrangement is disclosed for verifying that requests for a loop-around type test connection between two calling stations have originated from appropriate stations which are physically at the same location. Location verifying signals resulting from a series of one syllable words being spoken simultaneously into transducer elements of both calling stations are sensed and counted by a test circuit at the point of requested loop-around connection. Reception of a specified number of substantially simultaneous signals from both stations within a measured time period initiates establishment of the requested connection.

3,742,156

ELECTRO-ACOUSTIC MAGNETIC REED TYPE TRANSDUCER HAVING BOX-SHAPED POLE PIECE

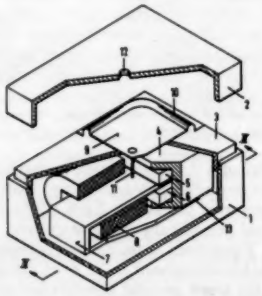
Harmen Broersma, Amsterdam, Netherlands, assignor to Microtel N.V., Amsterdam, Netherlands

Filed Sept. 3, 1971, Ser. No. 177,643

Claims priority, application Netherlands, July 16, 1971, 7109841

Int. Cl. H04r *11/00*

U.S. Cl. 179—119 A **4 Claims**



An electro-acoustic transducer with an open ended box-shaped inner housing which supports one leg of a U-shaped armature within a main frame. The other leg of the U-shaped armature extends through the open end of the box shaped housing and is free to vibrate in an air gap formed between two permanent magnets which are fixedly mounted on opposite inner wall portions of the box-shaped inner housing. The vibratable leg of the U-shaped armature is surrounded by a coil and is connected by a drive pin to a diaphragm. The box-shaped inner housing forms the closing portion of d.c. and a.c. flux paths.

3,742,157

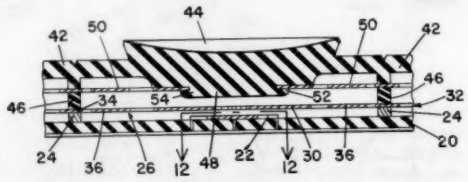
KEYBOARD SWITCH ASSEMBLY WITH IMPROVED MOVABLE CONTACT

Wayne V. Leposavic, Saratoga, Calif., assignor to Lematex, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 860,861, Sept. 25, 1969, Pat. No. 3,600,528. This application Apr. 16, 1971, Ser. No. 134,715

Int. Cl. H01h *9/26*

U.S. Cl. 200—5 A **18 Claims**



A multiple switch construction for a keyboard or the like produced as a flat panel embodying laminates of electrical conductors in desired patterns, assembled as stratifications in close proximity and separated by spacers. Individual depressible means operating through resilient members urge movable switch elements into contact with fixed electrical conductors with a rotary, wiping action to insure positive electrical contact.

3,742,158

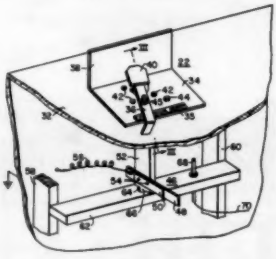
ROTARY TYPE GROUNDING SWITCH

Kenneth B. Bell; Frederick J. Brutt, and Alfonso J. Mazanek, all of Sharon, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 9, 1971, Ser. No. 179,079

Int. Cl. H01h *19/20*

U.S. Cl. 200—11 G **3 Claims**

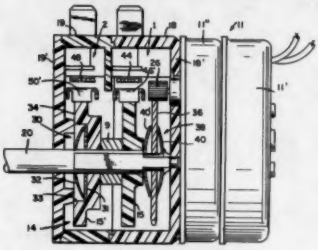


A two-piece shaft, having a spring contact attached thereto, extends through an apparatus casing and through an index plate. A handle is attached to the shaft and has mounted thereon a spring loaded plunger assembly which locks the handle into position. The spring contact, which is grounded, is rotated when the handle is rotated. When the handle is locked in the operating position, the switch is open. When the handle is locked in the grounded position, the spring contact touches a terminal stud which is connected to the output circuit of the electrical apparatus, thus grounding the output circuit.

3,742,159
MULTI-CAM TIMER WITH CLUTCH MEANS ALLOWING INDEPENDENT CAM ADJUSTMENT AND ROTATION OF CAM ASSEMBLY INDEPENDENT OF MOTOR

William Ray Brown, Beech Grove, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Apr. 13, 1972, Ser. No. 243,654
Int. Cl. H01h 7/08
U.S. Cl. 200—38 R 6 Claims

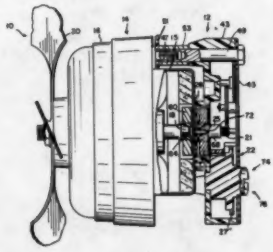


At least two cams having different settings are carried by a single shaft one of the cams including a clutch so as to be independently operable from the other. A second clutch allows both the cams to be manually rotatable independent of a motor drive means.

3,742,160
GAS CIRCULATING AND TIMER MEANS WITH MAGNETIC COUPLING DRIVE MEANS FOR CAM ACTUATED SWITCHES

Stephen F. Murray, and Maurice E. Schuder, both of Indianapolis, Ind., assignors to P.R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Mar. 10, 1972, Ser. No. 233,641
Int. Cl. H01h 7/08, 35/40, 36/00
U.S. Cl. 200—38 R 11 Claims

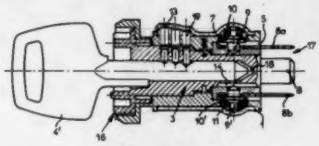


A shaft extends through a motor. A fan is carried on one end of the shaft and on the other end a magnet. A rotor is spaced from and in axial alignment with the magnet. A second magnet is carried by the rotor juxtaposition the first magnet such that the motor, when operating, rotates the fan and the first magnet, the first magnet causing rotation of the second magnet and thereby the rotor. A cam means which operates switch means is coupled to the rotor.

3,742,161
ELECTRIC SWITCH ASSEMBLY AND COMBINATION THEREOF WITH SAFETY LOCKS

Paul Lipschutz, Croissy-sur-Seine, France, assignor to Societe d'Exploitation des Brevets Neiman, Neuilly-sur-Seine, France

Filed May 10, 1972, Ser. No. 252,123
Claims priority, application France, May 10, 1971, 7116793; Apr. 21, 1972, 7214101
Int. Cl. H01h 27/00
U.S. Cl. 200—44 6 Claims

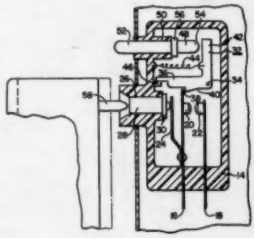


An assembly incorporating an electric switch including movable contact pieces displaceable by the switch rotor for making and breaking contact with corresponding stationary contact pieces selectively, bearing elements co-operating with said movable contact pieces and mounted in corresponding radial orifices of the switch stator opening to the outside through the side wall of the latter whereby said bearing elements are radially movable therein and constantly project outwards therefrom and at least one resiliently yielding sleeve tightly surrounding the switch stator and covering said bearing elements to resiliently bias them inwards.

3,742,162
SELF-CONTAINED DOOR SAFETY SWITCH WITH MANUALLY DISABLED LATCH

William A. Wasemann, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsbrugh, Pa.

Filed Oct. 27, 1971, Ser. No. 192,920
Int. Cl. H01h 3/16
U.S. Cl. 200—61.62 4 Claims



The invention discloses a self-contained safety switch for use in conjunction with an electric motor driven appliance, such as laundry apparatus, enclosed by a cabinet having an access door in which proper use of the switch first requires that the door is closed to bias the contacts of the switch in a direction to close them while a blocking member, internal to the switch housing, prevents the contacts from closing until removed through manually pressing a pin extending through the housing. The door, while in a closed position, thereafter maintains the contacts closed; however, whenever the door is open, the contacts return to their initial position requiring a repeat process of closing the door and subsequently depressing the extending pin to again actuate the appliance.

3,742,163
ACCELERATION RESPONSIVE SWITCH WITH LINEARLY MOVABLE CONTACTORS

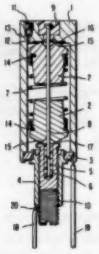
Heinz Gawlick, Furth; Hellmut Bendler, Erlangen; Uwe Brede, Schwaig; Gunter Hubsch, Kalchreuth, and Gunther Gottwald, Nurnberg, all of Germany, assignors to Dynamit Wobel Aktiengesellscaft, Troisdorf, Germany

Filed Nov. 3, 1971, Ser. No. 195,436

Claims priority, application Germany, Nov. 30, 1970, P 20 58 743.3

Int. Cl. H01h *35/14*

U.S. Cl. 200—61.45 R **20 Claims**



An electric switch which is responsive to acceleration and/or deceleration having at least one movable contact arranged in a housing and biased into electrically conductive connection with a corresponding contact surface arranged in the housing. A spring serves for biasing the movable contact piece with a constantly effective force of a predetermined magnitude which is determined by the axial extent of the spring and a screw element serves for controlling the axial extent of the spring to vary the magnitude of force provided thereby. In response to an accelerative force in a predetermined direction, the contact piece overcomes the biasing force and moves away from its contact surface thereby interrupting the conductive circuit path through the switch.

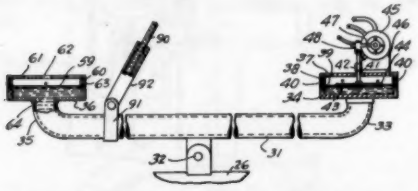
3,742,164
HYDRAULIC CONTROL

Wayne W. McMullen, 1055 N.W. 93rd Lane, Coon Rapids, Minn.

Filed Nov. 6, 1970, Ser. No. 87,442

Int. Cl. H01h *35/34*; **F16k** *31/165*

U.S. Cl. 200—83 R **7 Claims**



A hydraulic control which incorporates an elongate fluid containing tube having diaphragms mounted at each end thereof for actuation due to movement of the fluid in the tube. One or both of the diaphragms are used to mechanically actuate hydraulic valves for controlling a mechanism. Movement of the tube about a central transverse pivot will cause gravity flow of the fluid toward the lower diaphragm moving it outwardly while simultaneously moving the upper diaphragm an equal amount inwardly. The tube is mounted on the device to be controlled and the hydraulic mechanism is used to return the device to a position in which the two diaphragms are equispaced outwardly from the tube. The tube is such that when used with high speed devices centrifugal force will cause the outer diaphragm to be raised and the inner diaphragm lowered with respect to the curve that the device is moving through. In this instance the hydraulic mechanism may be used to bank the device as long as the centrifugal force is operating on the tube. In one modified form of the invention a thermal expansion & diaphragm action displacement resilient bag replaces the diaphragm not used for valve control.

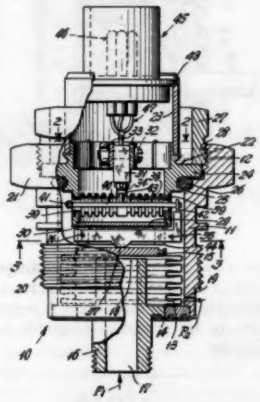
3,742,165
DIFFERENTIAL PRESSURE SWITCH

Robert R. Hellman, Bridgeport, Conn., assignor to Westport Development & Manufacturing Company, Inc., Milford, Conn.

Filed Dec. 30, 1970, Ser. No. 102,656

Int. Cl. H01h *35/32*, *9/04*

U.S. Cl. 200—83 Y **5 Claims**



A differential pressure switch having a bellows mounted in a housing to which pressures are applied to cause the bellows end to be moved by the pressure difference toward and from an open end of the housing. A cap closes the open end and carries a snap action electrical switch that is sealed from the pressures by another bellows mounted transversely to the first, so that movement of the end of the first bellows caused by pressure differences is transmitted to the switch by radial distorting the another bellows.

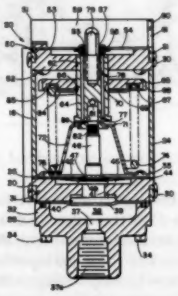
3,742,166
PRESSURE SWITCH

Carl A. Schaefer, Asheville, N.C., assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 12, 1971, Ser. No. 188,038

Int. Cl. H01h *35/34*

U.S. Cl. 200—83 SA **6 Claims**



A modular differential spring and contact assembly is adapted for mounting on a pressure sensing module in

selected positions providing optimum sensitivity for different spring rates of the pressure sensing components. Independent adjustment means are provided for range spring force, differential spring force, differential pick-up, and sensitivity so that the pressure switch assembly is operative in a wide variety of pressure ranges with different pressure sensing means, range springs and contact means.

3,742,167

PEDAL SWITCH FOR DENTAL DRIVES

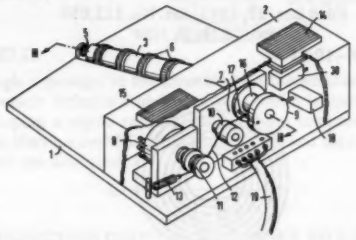
Manfred Muther, Bensheim, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Apr. 28, 1971, Ser. No. 138,217

Claims priority, application Germany, May 23, 1970, P 20 25 226.0

Int. Cl. H01h *3/14*

U.S. Cl. 200—86.5 **8 Claims**



A pedal switch for electrical drives, particularly dental bore drives has adjusting members operated by foot for releasing several switching and actuating procedures. The invention is particularly characterized by the provision of a lying shaft constituting a common actuating member for setting the speed of rotation and possibly other switching operations, the radial movement of the shaft being transmitted to the switching and/or actuating members.

3,742,168

MINIMUM-OIL CIRCUIT BREAKER INCLUDING MOVABLE CONTACT ROD WITH ELASTICALLY DEFORMABLE BRAKING MEMBER FOR APPLYING BRAKING FORCE THERETO PROPORTIONAL TO GAS PRESSURE GENERATED IN ARC-QUENCHING CHAMBER

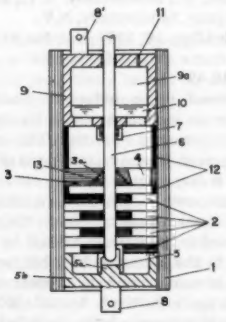
Werner Latal, Wettingen, and Willi Schneebeli, Zurich, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Aug. 19, 1971, Ser. No. 172,970

Claims priority, application Switzerland, Sept. 10, 1970, 13472/70

Int. Cl. H01h *33/68*

U.S. Cl. 200—150 B **3 Claims**



A circuit breaker of the minimum-oil type includes a chamber for quenching the arc drawn between a movable contact rod and a stationary contact as the two separate. To counteract and damp the acceleration effect produced on the movable contact rod within the quenching chamber as a result of gas pressure built up within the chamber due to arc action, a softly elastic annular damping member closely surrounds the movable contact rod and is deformed in a radially inward direction by the gas pressure to press against the movable contact rod and hence provide a braking action for the rod. The radially inward deformation of the elastic damping member is proportional to the gas pressure produced in the quenching chamber and hence provides a braking effect on the movable contact rod which desirably increases with an increase in gas pressure.

3,742,169

DEVICE FOR COMPRESSED GAS CIRCUIT BREAKER

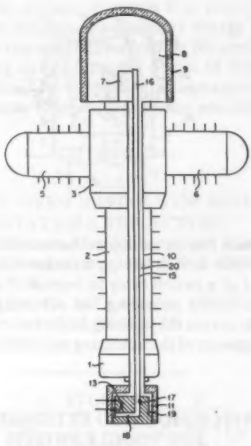
Horst Eggert, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 29, 1971, Ser. No. 110,925

Claims priority, application Germany, Jan. 30, 1970, P 20 50 024.2

Int. Cl. H01h *33/57*

U.S. Cl. 200—148 E **3 Claims**



A pressure gas switch having a high pressure container connected to ground potential and comprising a heating device is also connected to high voltage potential, with a second high pressure container via a tube and is provided with a hose, in order to improve the heating effect in the tube. The hose is so placed that a unidirectional flow may be effected through the hose as well as in the space between the tube and the hose.

3,742,170

LOUD TAP CHANGER BY-PASS SWITCH CONTROL ASSEMBLY AND MATERIAL COMPOSITION THEREOF

Thomas B. Topper, West Middlesex, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

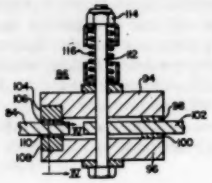
Filed Sept. 30, 1971, Ser. No. 185,161

Int. Cl. H01h *1/02*

U.S. Cl. 200—166 C **10 Claims**

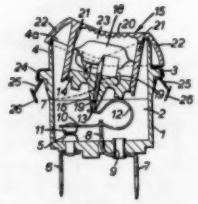
Contact structures with composite materials arranged to increase the operating life of the contact when used in load tap changer by-pass switches. An arc resistance refractory material is dimensioned and positioned to interrupt the current when the switch is opened. A highly conductive metallic material forms a sliding portion of the contact structure and is dimen-

sioned and positioned to conduct all of the switch current while the rotary blade of the switch is rotating. The material of



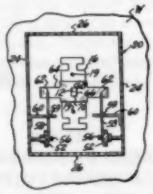
the sliding portion prevents galling of the rotary blade and considerably extends the operating life of the by-pass switch.

3,742,171
ELECTRIC SWITCH
John Arthur Howe, Tollerton, England, assignor to TRW Incorporated, Cleveland, Ohio
Filed Nov. 30, 1971, Ser. No. 203,233
Int. Cl. H01h *9/18*
U.S. Cl. 200—168 G **2 Claims**



The invention has for its object the reduction of the vulnerability of a rocker switch having a rocker substantially closing the open end of a switch body to ingress of splashes of liquid. This is achieved by providing the actuating member with a shroud which covers the opening in the switch body in all positions of adjustment of the actuating member.

3,742,172
WALL-SWITCH-MOUNTED EXTENSION OPERATOR FOR TOGGLE SWITCH
Phillip G. Velez, 32098 Riverdale, Mount Clemens, Mich.
Filed Dec. 23, 1971, Ser. No. 211,747
Int. Cl. H01h *3/40*
U.S. Cl. 200—172 A **6 Claims**

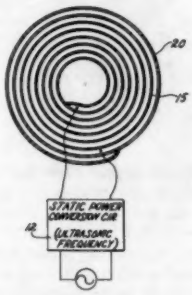


This amusement device enables a small child to actuate the operating lever of a toggle switch by swinging an imitation double-pole single-throw knife switch having knurled or toothed quadrant gears on the inner ends of its blades meshing with correspondingly-knurled or toothed gears rotatably mounted in a flanged casing bolted to the toggle switch. Pivoted to the peripheries of the casing-mounted gears are the lower ends of links, the upper ends of which are pivoted to a slide containing a vertical coupling slot, through which the wall switch operating lever projects. In a modification, the knife switch blades carry quadrant gears which are of approximately half the radii of the casing-mounted gears such that an approximately 180 degree swing of the knife switch blades produces an approximately 90 degree travel of the wall switch lever.

ERRATA

For Classes 200—157 and 219—121 see:
Patents Nos. 3,742,364 and 3,742,365

3,742,173
METHOD AND EQUIPMENT FOR COOKING ELECTRONICALLY BY SPECIFYING WATTS SETTING
William P. Kornrumpf, and John D. Harnden, Jr., both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 27, 1971, Ser. No. 212,058
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.41 **12 Claims**

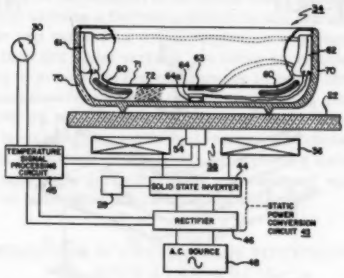


A method of cooking food using a recipe that specifies the absolute power level of an electronic range or appliance which inductively heats a cooking utensil. The power in watts generated by the electronic circuit driving an induction heating coil is a true indication of the power actually coupled to the utensil and used to heat the food. Induction cooking equipment for practicing the method requires only the addition of a wattmeter or other power measuring and indicating instrumentation. Adjustment to the desired watts setting can be manual or automatic.

3,742,174
INDUCTION COOKING APPLIANCE INCLUDING COOKING VESSEL HAVING MEANS FOR TRANSMISSION OF TEMPERATURE DATA BY LIGHT PULSES
John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 29, 1971, Ser. No. 213,336
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.49 **12 Claims**

Herein disclosed is an induction cooking/warming appliance wherein an induction coil is located below a vessel supporting means, such as a counter. The counter may have a passage therethrough for the transmission of light, or it may be a solid body of transparent or translucent material. A double-walled vessel for containing food to be cooked or warmed is provided. The vessel is supportable on the counter. An inner wall of the vessel is inductively heated by a main magnetic field produced by the induction coil; but, an outer wall of the vessel, which is in contact with the counter on which the vessel is supported, is not inductively heated. Moreover, the outer wall of the vessel transmits light. Included within the vessel between the two walls thereof is a temperature detection unit which includes a temperature sensor unit arranged for sensing the temperature of the inner wall of the vessel and means

responsive to the magnetic field produced by the induction coil for energizing an LED to produce light pulses at a rate corresponding to the temperature sensed by said temperature sensor unit. These light pulses are transmitted through the outer wall of the vessel and either through the counter or



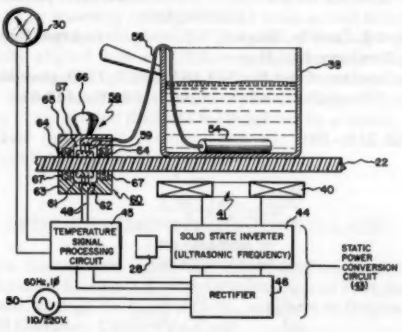
through a passage in the counter to a temperature receiving unit which includes a photodetector which is instrumental in developing a signal representative of the temperature of interest. Various embodiments of the vessel and the components thereof are disclosed.

3,742,175

INDUCTION COOKING APPLIANCE INCLUDING TEMPERATURE SENSING OF FOOD IN INDUCTIVELY HEATED VESSEL WITH IMMERSION-TYPE TEMPERATURE SENSING MEANS

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,349
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.49 **12 Claims**



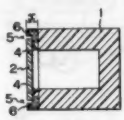
Disclosed in an induction range having a counter with an uninterrupted top or working surface on which a cooking vessel is supported and inductively heated by an induction coil situated beneath the counter. Since only the cooking vessel is inductively heated, rather than the counter, the counter is relatively cool. In order to actually determine the temperature of foodstuff being cooked in the vessel there is provided a temperature sensing unit suitably encapsulated in an immersion-type thermistor unit to which there is attached flexible cable comprising thermistor leads or conductors. The thermistor unit is immersed in the foodstuff in the vessel. The flexible cable extends out of the cooking vessel and is terminated in a portable magnetic coupling device which, when resting on the work surface of the range counter, magnetically couples signals representing temperature correlated changes in the thermistor unit's impedance to a magnetic receptor device mounted below the range counter. Thus, temperature changes in the immersed thermistor unit are reflected as temperature correlated impedance changes to the magnetic receptor device and these impedance changes, in turn, are effective to help determine the true temperature of the foodstuff being cooked in the vessel.

3,742,176

METHOD FOR PREVENTING THE LEAKAGE OF MICROWAVE ENERGY FROM MICROWAVE HEATING OVEN

Takeshi Ishino, and Nobuyuki Ono, both of Akita-ken, Japan, assignors to T.D.K. Electronics Company, Ltd., Tokyo, Japan

Filed June 22, 1970, Ser. No. 48,137
Claims priority, application Japan, Jan. 21, 1970, 45/5098; June 26, 1969, 44/50870
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **2 Claims**



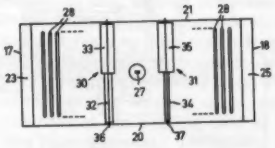
The object of the present invention is to provide a method for preventing the leakage of microwave energy through the gap between the oven and the door during the operation of the microwave heating device, and the object of the present invention can be attained by placing ferromagnetic material, i.e., a mixture mainly composed of ferrite powder in the path of wave-leakage.

3,742,177

MICROWAVE OVEN HAVING SYNCHRONOUSLY ROTATABLE REFLECTORS

Stellan Brynolf Wikstrom, Sundbyberg, and Leo Malmquist, Ektorp, both of Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,522
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **13 Claims**



A microwave oven with a waveguide for supplying microwave energy to the oven cavity. A magnetron antenna projects into the waveguide. A pair of cyclically rotatable reflectors are located on opposite sides of the antenna within the waveguide. The reflectors are positioned and shaped so as to reflect microwave energy back to the magnetron with a given phase lag so as to cause the magnetron to operate in the sink range.

3,742,178

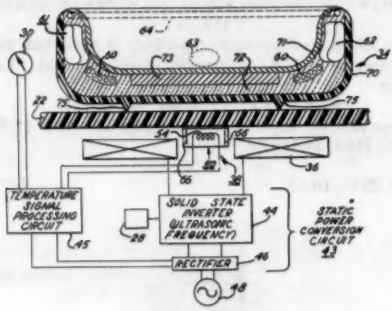
INDUCTION COOKING APPLIANCE INCLUDING COOKING VESSEL HAVING MEANS FOR WIRELESS TRANSMISSION OF TEMPERATURE DATA

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,335
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.77 **4 Claims**

Herein disclosed is an induction cooking range having a counter which supports a food-containing vessel. The vessel is

heated by the range's induction coil which operates at high frequency. The invention includes a temperature sensing unit comprising a temperature detection unit and a temperature receiving unit. The former unit is incorporated in the cooking vessel while the latter unit is remotely located therefrom in the



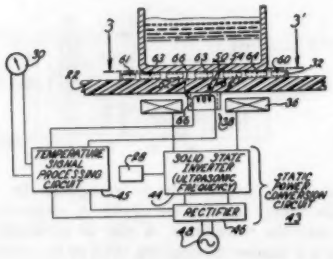
induction range. The aforesaid temperature receiving unit receives radio frequency transmissions of temperature data from the temperature detection unit in the vessel. The temperature detection unit in the vessel is powered by the main field produced by the induction coil.

3,742,179

INDUCTION COOKING APPLIANCE INCLUDING WIRELESS TRANSMISSION OF TEMPERATURE DATA

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,357
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.77 **4 Claims**



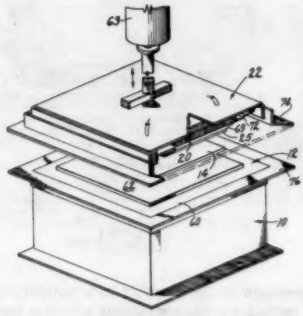
Herein disclosed is an induction cooking range having a counter for supporting a food-containing vessel; the vessel being heated by an induction coil which is driven at ultrasonic, or higher, frequencies. A temperature sensing unit is employed which includes a temperature detection unit located proximate to the vessel and/or food therein and a temperature receiving unit which is remotely located from the temperature detection unit and vessel but operating, nevertheless, to receive radio frequency transmissions of temperature data from the temperature detection unit which is, in the first instance, powered by the main field produced by the induction coil. Also disclosed is a compact packaging arrangement of the various electronic components of the temperature detection unit.

3,742,180

HIGH FREQUENCY CAVITY PRESS

Robert W. Bradley, Marblehead, Mass., assignor to USM Corporation, Boston, Mass.

Filed May 26, 1971, Ser. No. 147,083
Int. Cl. H05b *9/04*
U.S. Cl. 219—10.81 **14 Claims**



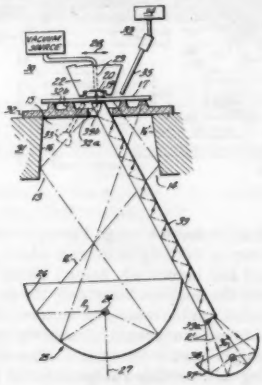
An apparatus for applying pressure and a high frequency electric field to material comprising a cavity for containing the electric field which encloses platens relatively movable to apply pressure to material placed between the platens. The cavity electrically communicates with the platens for supplying the contained electric field to the platens which, in turn, cooperate with each other to apply the field to the material between the platens. The cavity and platens are also directly coupled into the means for generating the electric field as a resonant circuit.

3,742,181

METHOD AND APPARATUS FOR HEATBONDING IN A LOCAL AREA USING COMBINED HEATING TECHNIQUES

Bernard J. Costello, Ringoes, N.J., assignor to Argus Engineering Company, Inc., Hopewell, N.J.

Continuation of Ser. No. 863,163, Oct. 2, 1969, abandoned.
This application Feb. 25, 1971, Ser. No. 119,016
Int. Cl. B23k *1/02*
U.S. Cl. 219—85 **11 Claims**



Apparatus for joining a dielectric or semi-conductive element to a metallic layer employing a combination of heating techniques. The substrate upon which the metallic layer is already deposited is heated to a "background" temperature substantially below the temperature required for bonding, to reduce the local temperature rise required to perform the bond and to reduce the shock experienced by the substrate due to thermal gradients which occur during the bonding cycle. The bonding energy in the form of radiant energy, is

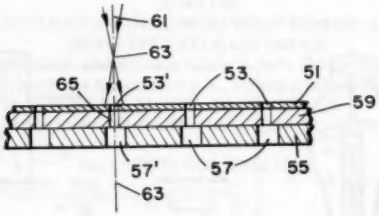
focussed upon the side of the substrate opposite to the side on which the bond is to be formed, and in the region of said bond, and is at a level sufficient to heat the interface to a temperature greater than the bond point to enable the two materials to flow together and form the bond. Focussing the bonding energy upon the opposite surface of the substrate causes the bonding surface of the element to be hotter than the bulk of the element thus causing a thermal gradient across the element such that the top surface of the semiconductor element is much cooler than the under surface, providing an enhanced margin of safety in preventing thermal damage to active zones or thermally sensitive regions in the element being bonded. The dielectric or semi-conductive element being bonded to the metal layer is often scrubbed across the metal layer to enhance formation of the bond by removing oxide coatings which may have formed on the element and which would otherwise reduce the effectiveness of the bond.

3,742,182

METHOD FOR SCANNING MASK FORMING HOLER WITH A LASER BEAM

Richard J. Saunders, Milpitas, Calif., assignor to Coherent Radiation, Palo Alto, Calif.

Filed Dec. 27, 1971, Ser. No. 211,912
Int. Cl. B23k *27/00*
U.S. Cl. 219—121 LM **8 Claims**



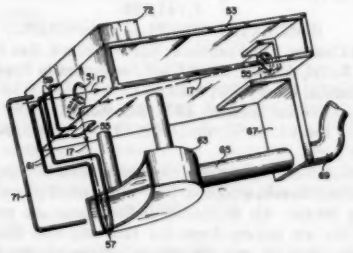
A technique of constructing a plurality of holes in sheet material by scanning a coherent laser beam across holes in a mask overlaying said material. The use of a stream of gas coaxially aligned with said coherent light beam is also disclosed. A special technique is included for making one or more holes in a non-homogeneous particulate sheet material having finely divided particles held together by a binder, such as green (unbaked) ceramic, with the use of a coaxial coherent light beam and gas pressure stream.

3,742,183

OPTICAL ELEMENT PROTECTION IN LASER APPARATUS

Rodolfo Castro, San Juan Capistrano; William J. Newton, Lakewood; Esteban J. Toscano, Oceanside, and Felix Jerome Viosca, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 26, 1971, Ser. No. 202,422
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 L **4 Claims**



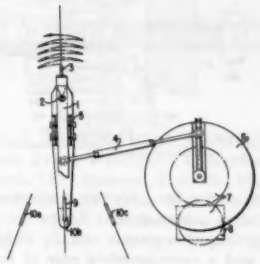
Debris produced by a laser cutter is kept out of the laser optics and is carried away by an airflow system which moves with the cutting beam.

3,742,184

METHOD AND APPARATUS FOR AUTOMATIC ARC WELDING IN A VERTICAL POSITION

Masayasu Arikawa; Atsushi Ohi; Akihiko Ihochi, and Kenichiro Hashimoto, all of Fukiai-ku, Kobe, Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Filed Dec. 24, 1970, Ser. No. 101,244
Claims priority, application Japan, Dec. 27, 1969, 44/1036; Feb. 10, 1970, 45/11658
Int. Cl. B23k *9/12*
U.S. Cl. 219—126 **3 Claims**



A method of arc welding in a vertical direction and an arc-welding machine for automatically performing the steps of the same are provided. According to the arc welding method of the invention, the advancement of a consumable electrode wire is accelerated and the welding voltage of the welding torch is increased as the torch crosses the centerline of a generally vertically extending weaving pattern it is caused to follow during a welding operation. After passing the centerline, the voltage is decreased to its original level, as it is on the return stroke also. This method is further improved by increasing the welding current of the torch slightly after increasing the welding voltage and further by decelerating or stopping the weaving motion at both sides and at the center of the weaving path of the wire. The apparatus for automatically carrying out this arc welding method comprises, in conjunction with an advancing consumable electrode wire and a welding torch adapted to follow a weaving path in a generally vertical direction, means for changing certain of the welding conditions, such as the advancing speed of the metal wire, the welding voltage and current, the weaving speed, and means for aligning the centerline of the weaving path or width to the welding centerline of a base metal.

3,742,185

LITHIUM CONTAINING WELDING ELECTRODE

John M. Parks, Solon, Ohio, assignor to The Lincoln Electric Company, Cleveland, Ohio

Filed May 7, 1971, Ser. No. 141,375
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **13 Claims**

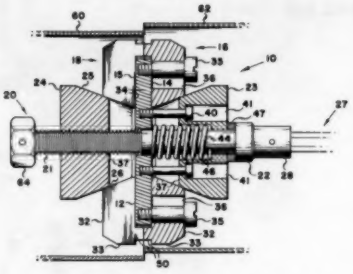
An electrode for electric arc welding in air and a method of using same. The electrode contains lithium compounds and agents to reduce these compounds to elemental lithium in the welding arc. Lithium is added to the welding rods preferably in the form of lithium fluoride and/or lithium silicates, while the reducing agents are preferably calcium, aluminum and magnesium, and are preferably added in the form of intermetallic compounds of calcium and aluminum, and calcium and magnesium. A quench material to de-stabilize or quench the lithium-containing arc plasma and give it a higher voltage gradient may also be used. Satisfactory quench ingredients include carbohydrates; sugar (sucrose), because of its ready availability and lost cost, is preferred.

3,742,186

IMPROVEMENT IN A GRAPPLING DEVICE

Abraham M. Finkel, North Hollywood, and Charles R. Jensen, Santa Susana, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed July 19, 1971, Ser. No. 163,650
Int. Cl. B21j *13/08*
U.S. Cl. 219—160 **10 Claims**



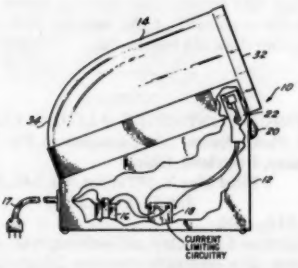
A grappling device for achieving a seizure of two abutting tubes for welding purposes. The device comprises a pair of sets of wedge-shaped segments radially slidable on a center guide plate, and a corresponding pair of frustum members which move axially of the guide plate so as to radially extend or retract the segments. Means for axially moving the frustum members extend centrally of the plate and such members, and a cable means is attached thereto for flexible manipulation of the device from any point remote from the welding joint area irrespective of whether the configuration of abutting tubes is straight, bent, or curved. Actuation of the sets of wedge-shaped or mandrel segments provides a seizure upon and, thus clamping for the abutting tubes. Provision is made in the segment structures for chill bars which also provide for complete circulation of purging gas at the joint.

3,742,187

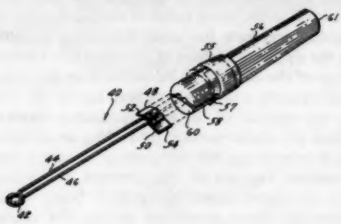
INOCULATION AND TRANSFER LOOP AND STERILIZER

Stanford G. Folus, Randallstown, Baltimore, Md., assignor to Becton, Dickinson & Company, East Rutherford, N.J.

Filed Oct. 22, 1970, Ser. No. 83,268
Int. Cl. H05b *3/00*; A61l *3/00*; C12b *1/02*
U.S. Cl. 219—240 **2 Claims**



An improved sterilizer is provided for inoculation and transfer loops, needles, and other instruments formed of metals of high electrical resistance. The sterilizer includes a member having a V-shaped groove therein adapted to receive and support an instrument. A pair of electrodes are positioned on opposite sides of the groove so that an instrument resting in the groove completes the electrical circuit between the electrodes. The sterilizer also includes a removable hood having a single opening at one end disposed above the electrodes. An improved instrument designed to insure proper contact with the sterilizer electrodes is also provided. The instrument includes a loop and a pair of transverse tabs which extend outwardly from extensions of the loop for a distance greater than that between the electrodes.

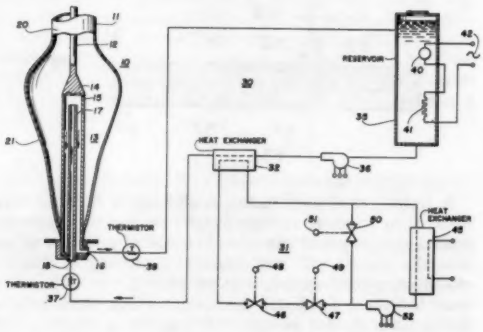


3,742,188

DUMMY LOAD SYSTEM

Earl W. Sundbye, Garland, Tex., assignor to Continental Electronics & Manufacturing Company, Dallas, Tex.

Filed Apr. 24, 1972, Ser. No. 247,062
Int. Cl. F24h *1/20*
U.S. Cl. 219—323 **15 Claims**



A dummy load includes a resistive sodium nitrite resistive load directed by insulating tubes to flow in the load. The cooling circuit includes a primary circuit having inlet and outlet thermistors, and a secondary cooling circuit coupled thereto by a liquid to liquid heat exchanger. In the control circuit, the thermistors are serially connected in a bridge circuit, unbalances in the bridge being detected to directly control a motor for controlling a valve in series in the secondary loop. A pair of slower moving valves in series and shunt respectively in the secondary loop are controlled upon the movement of the directly controlled valve to a limit position.

3,742,189

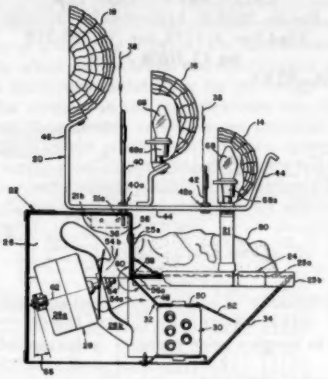
SIMULATED FIREPLACE ASSEMBLY

Robert Conroy, San Francisco; Burton Hirsch, San Mateo, and Ray Redel, Albany, all of Calif., assignors to Fred Meyer of California, Emeryville, Calif.

Filed Sept. 20, 1971, Ser. No. 181,745
Int. Cl. H05b *1/00*; G09f *13/34*; F24h *3/04*
U.S. Cl. 219—367 **25 Claims**

A simulated fireplace assembly includes a housing having a fan located therein whose air flow axis is tilted upwardly, and a heating means. Air deflecting baffle plates are provided to divert the air stream from the fan into two streams, one generally vertical and the other horizontal; the horizontal stream passes the heating means and thence through an air-permeable front panel of the housing to heat the surrounding space, while the vertical air stream exists through an air-

permeable top panel of the housing to activate portions of a



flame simulator associated with an ornamental display of at least one log supported on the top of the housing.

3,742,190

APPARATUS FOR LABORATORY TESTING OF SUSTAINED RELEASE DRUGS

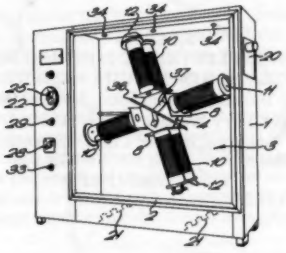
Celestino Giani, and Roberto Valducci, both of Province Milan, Italy, assignors to Eurand S.p.A., Balsamo, Milan, Italy

Filed July 21, 1971, Ser. No. 164,618

Claims priority, application Italy, July 22, 1970, 27733 A/70

Int. Cl. F27b *7/00*; **F27d** *11/02*

U.S. Cl. 219—389 **3 Claims**



An apparatus for lab testing sustained release drugs, characterized by the fact of consisting of a thermostatic chamber accurately regulated to a temperature falling within a very restricted range, said temperature being controlled by a mercury bulb thermometer with maximum and minimum contact points and a relay acting across a switch connected to a heat source, whose thermostatic chamber holds a rotating wheel-shaped device upon which is fixed a given number of elution bottle housings.

3,742,191

INFRARED TEMPERATURE SENSOR AND CONTROL FOR USE WITH HEATED, MOVING BODIES

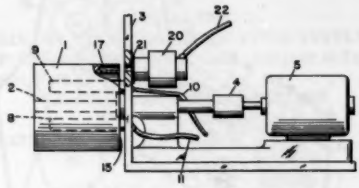
Richard R. Poole, and David D. Bulkley, both of Norwalk, Conn., assignors to Irtronics, Inc., Stamford, Conn.

Division of Ser. No. 841,861, July 15, 1969, Pat. No. 3,652,263. This application May 4, 1971, Ser. No. 140,122

Int. Cl. H05b *1/02*

U.S. Cl. 219—471 **4 Claims**

A temperature sensor is provided for measuring infrared radiation from a heated, moving processing device. The measurement is made from a "black body" cavity extending within the device being measured and so provides greater accuracy of readings. If the device being measured is cylindrical and rotates, the cavity is along the edge of the rotational surface and may be subdivided so as to provide a chopper for the



readings. Control circuitry associated with the infrared detector allows the sensor to control heating elements within the device.

3,742,192

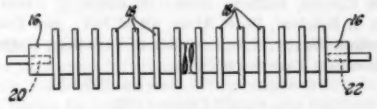
ELECTRICAL HEATING DEVICE AND METHOD

John T. Brzuszek, 26741 Woodmont, Centerline, Mich., and Emil J. Brzuszek, 7122 Jenerous, Roseville, Mich.

Filed Feb. 2, 1972, Ser. No. 222,948

Int. Cl. H05b *3/10*

U.S. Cl. 219—553 **2 Claims**



In accordance with the invention there is provided an electrical heating device comprising a semiconductor body having bidirectional electric current conducting characteristics and having ohmic electrical contacts secured thereto at spaced points thereon for passing an electric current through at least a portion of said body, said body containing at least 99 percent by weight silicon and at least one other element uniformly dispersed therethrough.

3,742,193

DEVICE FOR SELECTING THE CALCULATING MECHANISM AND CONTROLLING THE MODE OF OPERATION OF A CASH REGISTER OR PRINTING ACCOUNTING MACHINE

Gunter Kleffman, Bielefeld, and Gerhard Rethmeier, Oldentrup, both of Germany, assignors to Anker-Werke AG, Bielefeld, Germany

Filed Apr. 26, 1972, Ser. No. 247,556

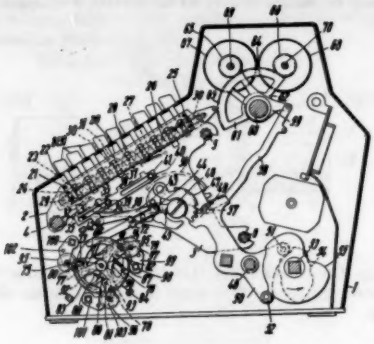
Claims priority, application Germany, Apr. 26, 1971, P 21 20 461.5

Int. Cl. G06c *23/00*

U.S. Cl. 235—62 F **12 Claims**

Device for selecting calculating mechanisms and controlling modes of operation of a cash register or printing accounting machine having manual or automatic selecting and controlling means associated one with the other for selecting the calculating mechanisms and the respective mode of operation of the machine and including a row of control keys, rows of calculator selecting keys and differential release mechanisms associated with the rows of keys, including control discs which, in automatically operative condition of the machine, for determining cross totals of the calculating mechanisms, are pre-adjustable stepwise by the machine drive into a new control position for a next succeeding machine operation, stop means for the control discs, and sensing means for determining in the next succeeding machine operation a setting for one of the rows of control keys and for the differential release mechanisms associated with the rows of calculator selecting

keys, upon which setting the selecting of the calculating



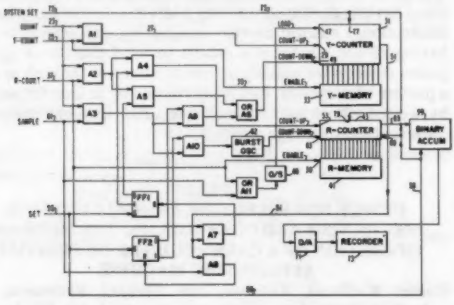
mechanisms and the controlling of the modes of operation are dependent.

3,742,194

METHOD AND APPARATUS FOR PROVIDING DIRECT REAL-TIME DETERMINATION OF A PARTICULATE POPULATION

Stephen Caruso, Suffern; Henry D. Isenberg, Great Neck; Allen S. Reichler, Pearl River, all of N.Y., and Donald F. Wiseman, Wayne, N.J., assignors to Technican Instruments Corporation, Tarrytown, N.Y.

Filed May 3, 1971, Ser. No. 139,432
Int. Cl. G06m *11/02*
U.S. Cl. 235—92 PC **17 Claims**



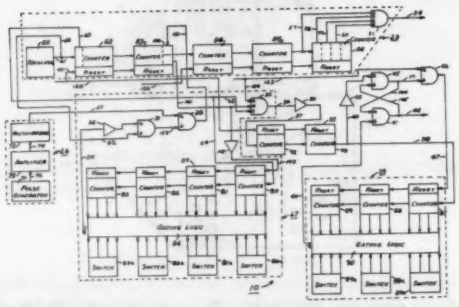
A method and apparatus is described for determining the susceptibility of a significant microorganism in a biological sample to different anti-microbial agents, and for providing its antibiotic susceptibility profile. Quotients of the biological sample are provided to a plurality of biological chambers, two of such chambers being used as internal "start" and "reference" controls. In the remaining biological chambers, proliferation of the significant microorganism is challenged by the addition of selected antibiotics. In the "start" control chamber the microorganisms are "killed" simultaneously with the addition of antibiotics to the biological chambers; after incubation, the microorganisms in the remaining biological chambers and, also, the "reference" control chambers are "killed" concurrently. Each of the biological chambers and the control chambers are sampled, and the total particulates, i.e., nonviable and "killed" microorganisms and, also, any dust or dirt particles, are counted in particular sequence, ad the respective counts are logically related, so as to signify the susceptibility of the significant microorganism to each of the antibiotics. The results are graphically recorded, so as to provide an antibiotic susceptibility profile of the significant organisms.

3,742,195

RALLY RACE COMPUTER

William R. Randle, 2030 W. Livingston St., Orlando, Fla.

Filed Nov. 3, 1971, Ser. No. 195,318
Int. Cl. H03k *21/02*
U.S. Cl. 235—92 EV **8 Claims**



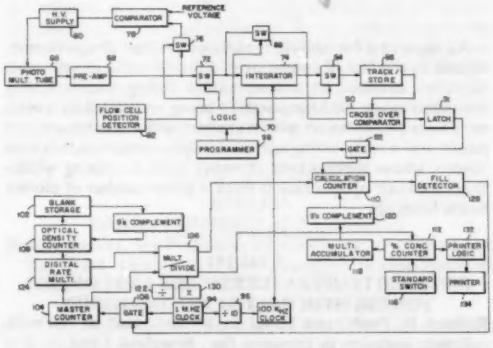
A rally race computer includes a circuit providing a time based pulse output, a circuit having a distance based pulse output, a programmable divider circuit, a circuit having a distance based pulse output which includes a programmable multiplier circuit, a summation and visual display circuit for additively counting the time based pulse output and subtractively counting the distance based output, a circuit controllable to steer the distance based pulse output into a selected additive or subtractive mode in the summation circuit, and means manipulatable to control the steering circuit. Gating means of the multiplier circuit and a divider circuit component of the multiplier circuit, operate in dependency upon the oscillator output of the time based pulse providing circuit.

3,742,196

METHOD AND ELECTRONIC CONTROL FOR THE ANALYZATION OF SERUM CHEMISTRIES

Larry George Durkos, Indianapolis; Robert Wayne Cole, Zionsville, and Jerry William Denney, Carmel, all of Ind., assignors to American Monitor Corp., Indianapolis, Ind.

Filed Sept. 9, 1971, Ser. No. 179,135
Int. Cl. G06f *15/42*
U.S. Cl. 235—151.3 **10 Claims**



An electronic control logic system for processing the results of a spectrophotometer analysis of a serum chemistry comprised of a serum and one or more chemical reagents. The spectrophotometer output representing air as a light path and another output representing the test chemistry as a light path are integrated and the air path integrated value allowed to exponentially decay until its value is equal to that of the integrated test chemistry path value. The decay time is con-

verted into a train of digital pulses representative of the optical density of the test chemistry. These pulses are counted and their total stored for comparison with the corresponding optical density of a standard solution. The concentration of the element for which the particular test was designed to detect is known for the standard solution, so the percentage concentration of that element in the test chemistry may be thereby ascertained. Programable variations are provided to enable the evaluation of test results from a kinetic or an end point test. The results of the analysis, together with a test identification number and a patient identification number is selectively applied by a printer control logic section for suitable printing of the data.

3,742,197

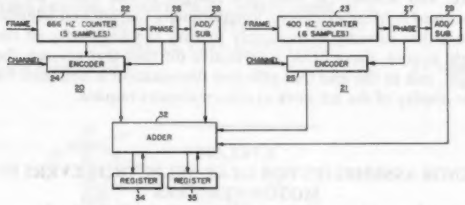
SYNTHESIS OF DIGITAL SIGNALS CORRESPONDING TO SELECTED ANALOG SIGNALS

Uwe A. Pommerening, Webster, N.Y., assignor to Stomberg-Carlson Corporation, Rochester, N.Y.

Continuation of Ser. No. 4, Jan. 2, 1970, abandoned. This application Jan. 14, 1972, Ser. No. 217,988

Int. Cl. B06f 7/38

U.S. Cl. 235—152 **8 Claims**



Digital signals for use in a time-divided multiplex signalling system are synthesized directly in digital form. Binary signals indicative of the differences between the values of successive time-spaced samples of preselected analog signals are fed through gates to an up-and-down accumulator under control of a counter and phase and polarity discriminators. The output of the accumulator at any instant represents the algebraic sum of all previous signals received by it. The preselected analog signals are preferably of the kind that can be represented by the sums of one or more simple trigonometric functions, so the sample values need be calculated only for a quarter wave.

3,742,198

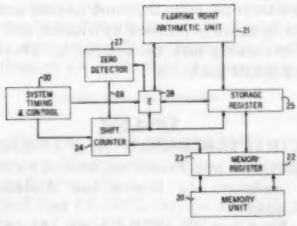
APPARATUS FOR UTILIZING A THREE-FIELD WORD TO REPRESENT A FLOATING POINT NUMBER

Robert Morris, Millington, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 19, 1971, Ser. No. 126,016

Int. Cl. G06f 3/00

U.S. Cl. 235—154 **3 Claims**



Apparatus and method embodying a novel representation of a floating point number. The novel representation utilizes a computer word having two fields of fixed length one of which is subdivided into two fields of variable length, thereby effectively resulting in three fields. This novel representation allows a large trade-off to be made between accuracy and exponent range within the bounds of a single fixed-length data word.

3,742,199

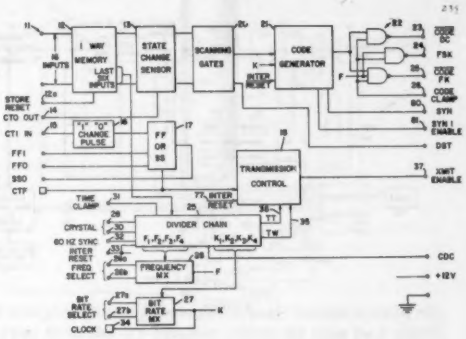
BINARY CODE COMMUNICATION SYSTEM

Daniel P. Lubarsky, San Mateo, Calif., assignor to Larse Corporation, Palo Alto, Calif.

Filed Sept. 21, 1970, Ser. No. 73,935

Int. Cl. G06f 3/04

U.S. Cl. 235—154 **2 Claims**



A binary code communication system in which the binary bits are formatted for transmission into a sequence of code elements, each code element comprising four bits beginning with a timing bit having a first binary value followed by two consecutive data bits in turn followed by a second timing bit having a second binary value. One or more encoders receive binary data bits from a plurality of parallel inputs, serially convert the binary data bits into a data string, generate appropriate timing bits, and logically gate the data bits and timing bits into code elements. The code elements are grouped into words for transmission. One or more decoders receive, analyze and decode the transmitted encoded data sampling the bit values and bit transitions within each code element to determine the occurrence of errors. Error-free decoded data is passed to output while erroneous data is flagged. A system for transmission of encoded data from a plurality of remote stations on a single channel is described.

3,742,200

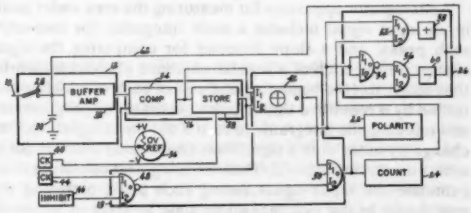
ANALOG TO DIGITAL CONVERSION APPARATUS FOR USE WITH TRACING SYSTEM TO PRODUCE A STORED PROGRAM THEREFROM

Thomas C. Marley, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 6, 1971, Ser. No. 140,756

Int. Cl. G06f 3/00

U.S. Cl. 235—154 **2 Claims**



An apparatus for use with a tracing system, the apparatus converting an analog deflection signal generated by the tracing stylus into a quantized pulse signal and a polarity signal to

be received by the accumulator of a numerical control system to produce a stored program therefrom.

3,742,201

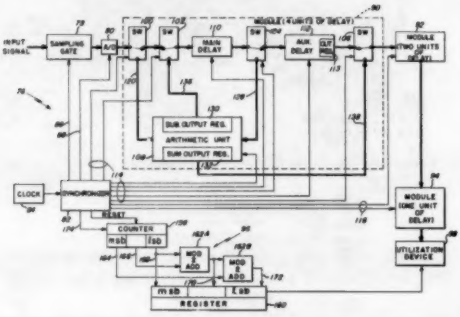
TRANSFORMER SYSTEM FOR ORTHOGONAL DIGITAL WAVEFORMS

Herbert L. Groginsky, Wellesley, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 22, 1971, Ser. No. 117,472

Int. Cl. G06f *7/38, 15/34*

U.S. Cl. 235—156 **10 Claims**



A transformation system for transforming a set of input data samples into a set of output transform components, the transformation being based on the use of a set of orthogonal digitally generated waveforms analogous to the use of sinusoids in a Fourier spectral analysis. The transformation is accomplished by sequentially storing, summing, and subtracting selected data samples and combinations thereof to effect a matrix multiplication of the set of input data samples.

3,742,202

PEAK INTEGRATOR

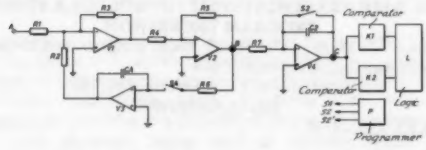
Ernst Spreitzhofer, Nussdorf, Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen/Bodensee, Germany

Filed Nov. 18, 1971, Ser. No. 199,901

Claims priority, application Germany, Nov. 20, 1970, P 20 56 998.6

Int. Cl. G06g *7/18;* **H03k** *5/20*

U.S. Cl. 235—183 **3 Claims**



An integrator apparatus for measuring the area under peaks in an input signal includes a main integrator for measuring such peaks, and a slope detector for comparing the signal change during each of a regular sequence of short measuring time intervals (the beginning and end of each of which is controlled by a repetitive timing pulse generator or programmer) and resetting the integrator to zero if the input signal does not change by more than a significant (threshold) amount during such a measuring interval. Thus the integrator continues to accumulate the input signal during each peak, including that part found in the first measuring time interval in which the beginning of the peak is detected, but the integrator is reset to zero after all measuring time intervals in which no signal peak exists, including those in which a peak has ended and those in which only noise is present.

3,742,203

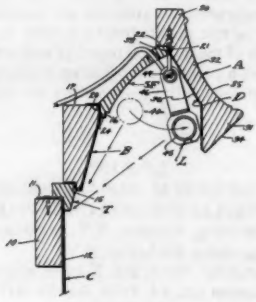
ADJUSTABLY ILLUMINATED PICTURE FRAME

Joe T. Noe, 308 Joaquin Road, Arcadia, Calif.

Filed Sept. 10, 1971, Ser. No. 179,501

Int. Cl. F21v *33/00*

U.S. Cl. 240—4 **20 Claims**



A frame for the mounting of paintings or pictures and the like, and wherein at least one margin of the frame carries recessed lighting extending longitudinally thereof and adjustable either directly or remotely to vary the angularity of the light source, there being a reflective diffuser that spreads the light, and to the end that efficient illumination is obtained for the display of the art work as circumstances require.

3,742,204

KNOB ASSEMBLIES FOR GEAR-SELECTRO LEVERS IN MOTOR VEHICLES

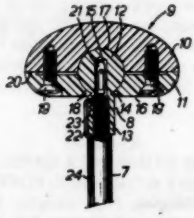
Ernest James Price, 15 Harvard Road, Solihull, England

Filed Mar. 11, 1971, Ser. No. 123,364

Claims priority, application Great Britain, Mar. 13, 1970, 12,102/70

Int. Cl. B60q *3/00*

U.S. Cl. 240—7.1 R **8 Claims**



A knob for the gear-selector lever of a motor vehicle is so mounted that it can rock about at least one axis. In use this axis is preferably transverse to the direction of motion of the car. There may be a ball-and-socket connection between the knob and the lever allowing the knob to rock universally. The knob may be retained in position by friction, and the frictional resistance to rocking may be adjustable. There may be an electric lamp inside the knob.

3,742,205

RETRACTABLE HEAD LAMP ASSEMBLY

Rejean Beauregard, and Yvon Cote, both of Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada

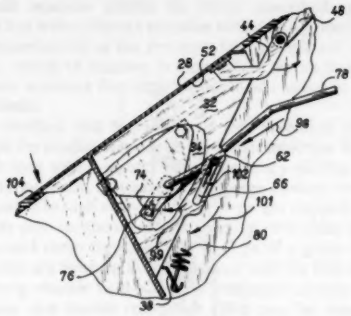
Filed Sept. 20, 1971, Ser. No. 181,687

Int. Cl. B60q *1/00, 3/00*

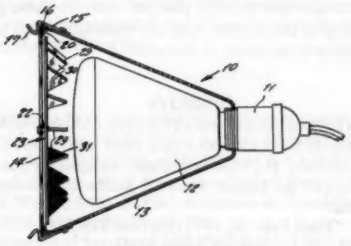
U.S. Cl. 240—7.1 H **7 Claims**

The disclosure herein describes a retractable head lamp assembly consisting of a housing which is pivotable in and out of

an opening provided in the cab of a snowmobile. It also includes a light projector secured to the housing and a lever assembly operable at the driver station for the pivotal movement of the housing through the opening.



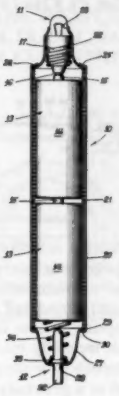
3,742,206
KALIEDO-LIGHT
Frank Summa, 22 Starbuck St., Staten Island, N.Y.
Filed July 9, 1971, Ser. No. 161,202
Int. Cl. F21v *11/00, 13/00*
U.S. Cl. 240—10.1 **1 Claim**



A luminous display device for projecting various colored light rays in a moving effect, the device consisting of an electric light socket fitted with a standard flood light or spot light lamp bulb and which is enclosed within an outer shade, the shade being open at its front end within which there is a front frame support secured by means of spring clips, the front frame support having a series of openings therethrough so to permit light rays from the bulb to pass therethrough, and the front frame support supporting a rotatable metallic conductor reflector with a series of tabs struck out therefrom, the tabs being bent up at right angles to the plane of the metallic conductor reflector, one side of the tabs having a highly polished surface on one side while the opposite side thereof has a dull matte black applied thereto, the conductor reflector of the device being caused to rotate by convection currents generated by the heat of the bulb, and each of the struck out openings in the conductor reflector being fitted with variously colored glass through which the light rays penetrate.

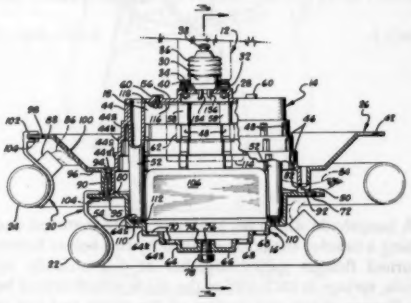
3,742,207
THROW-AWAY FLASHLIGHT
Howard J. Strauss, Bloomington, Minn., assignor to Gould Inc., Mendota Heights, Minn.
Filed May 15, 1972, Ser. No. 252,977
Int. Cl. F21l *7/00*
U.S. Cl. 240—10.68 **5 Claims**

The case of the flashlight comprises a paper shell within a metal tube. At one end is a metal ferrule having a peripheral flange which is trapped between the crimped end of the tube and the shell. This ferrule holds a light bulb. At the other end is a second metal ferrule also having a peripheral flange trapped between the crimped end of the tube and the shell. A



metal plunger extending through the latter ferrule is resiliently held away from the dry batteries within the tube by a plastic spring. When the plunger is pushed against the adjacent end of the dry cells an electrical circuit is completed to light the light.

3,742,208
LIGHTING FIXTURES USING CIRCULAR, TUBULAR FLUORESCENT LAMPS
Arnold Mills, Novato, Calif., assignor to Alvin Corkland, Mill Valley, Calif.
Filed Dec. 7, 1971, Ser. No. 205,580
Int. Cl. H05b *33/02*
U.S. Cl. 240—51.12 **19 Claims**



A lighting fixture utilizing one or more circular fluorescent lamps and connectable to conventional screw-in or bayonet type sockets comprises a pair of upper and lower housing members which cooperate to provide a supporting enclosure for ballast and starter components required for the lamps. The housings are shaped and provided with openings so as to assure constant cooling of these components by circulating ambient air. An intermediate annular member fixed to the housing members supports an additional circular lamp and also serves as a reflector. The fixture is adaptable for installation in an upright position to a ceiling socket or alternatively in the reverse position to a floor or table lamp structure.

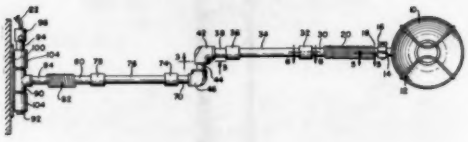
3,742,209
LIGHTING FIXTURE

Charles S. Williams, P.O. Box 6534, Lubbock, Tex.

Continuation-in-part of Ser. No. 58,622, July 27, 1970, which is a continuation-in-part of Ser. No. 846,000, July 30, 1969, abandoned. This application May 28, 1971, Ser. No. 147,835

Int. Cl. F26s 1/00

U.S. Cl. 240—73 BJ 13 Claims



A light support portion is interconnected to a first spring means. The first spring means is interconnected with a second spring means by an intermediate relatively rigid means which may include a swivel joint connected at an intermediate point thereof. The second spring means is interconnected with a mounting means which movably mounts the lighting fixture for movement with respect to a support means, the lighting fixture being supported in a generally horizontal relationship. The second spring means is shorter and more rigid than the first spring means and serves mainly to absorb vertical forces while the first spring means absorbs both vertical and horizontal forces.

3,742,210
COLLAPSIBLE LAMP SHADE

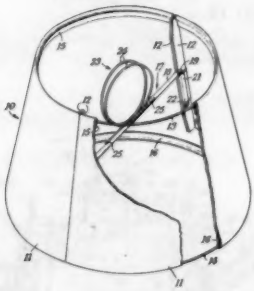
Paul Fraser Chapman, Aberaeron, Wales, assignor to Kenneth George Chapman, Aberaeron, Wales

Filed Jan. 25, 1972, Ser. No. 220,639

Claims priority, application Great Britain, Jan. 27, 1971, 3,289/71

Int. Cl. F21v 1/06

U.S. Cl. 240—108 R 7 Claims



A lampshade which is capable of being flattened and comprising a tubular shade constituted by two halves formed with inturned flanges joined together at diametrically opposite points, springs in each half of the shade which extend between the flanges at top and bottom of the shade and can yield to permit the shade to be flattened, supporting means for supporting the shade in the expanded condition and a fitting carried by the supporting means for attaching the shade to a lamp to be shaded.

3,742,211
LAMP REMOVAL ARRANGEMENT

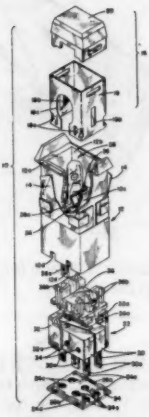
Marlo Wayne Groezinger, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 1, 1972, Ser. No. 285,839

Int. Cl. F21v 17/00; H01r 13/62

U.S. Cl. 240—152 6 Claims

A lamp removal arrangement for a panel mounted illuminated device having a tubular housing in which a wedge base lamp is supported and further having a light transmitting closure which includes resilient fingers that pass over the tubular position of the lamp during assembly of the closure to the housing and that rigidly engage the portion of the lamp located between the tubular portion and the base portion upon removal of the closure from the housing so as to thereby cause the lamp to be removed therewith.



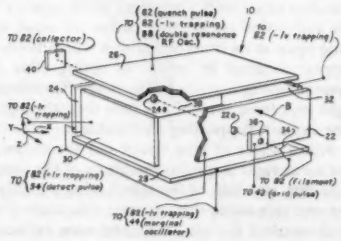
3,742,212
METHOD AND APPARATUS FOR PULSED ION CYCLOTRON RESONANCE SPECTROSCOPY

Robert T. McIver, Jr., Stanford, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Feb. 16, 1971, Ser. No. 115,216

Int. Cl. B01d 59/44

U.S. Cl. 250—41.9 DS 24 Claims



A method and apparatus for pulsed ion cyclotron resonance spectroscopy is disclosed in which a gas sample within an analyzer cell is ionized by means such as a pulse of an electron beam. The ions are subjected to a combined action of a plurality of static electric fields and a magnetic field thereby trapping the ions and causing them to move orbitally within the cell. Following ionization by said pulse of an electron beam and after a reaction time delay period, ions of a given charge-to-mass ratio are brought into resonance with an oscillating electric field applied transversely to the lines of force of the magnetic field. During such detection period those ions in resonance with the oscillating electric field absorb energy therefrom, which absorbed energy is detected as a measure of the resonant ions. The ions are then swept from the cell. By

use of oscillating electric fields of different frequencies for resonance with ions of different charge-to-mass ratio the arrangement serves a mass spectrometer function. For ion-molecule reaction studies the above described cycle is repeated but with different reaction time delay periods whereby the concentration of the resonant ions at different times during the course of reaction is determined. From this, the thermal rate constant for such ion-molecule reaction is readily determined.

The method and apparatus of this invention are readily adapted for double resonance mass spectroscopy. By irradiating the ions with a pulsed radio frequency electric field at a second frequency, ions of a given charge-to-mass ratio may be accelerated to high velocity, yet still remain trapped within the analyzer cell. As above, after a reaction time delay period following said radio frequency pulse, ions of a given charge-to-mass ratio are brought into resonance with the first mentioned oscillating electric field to obtain a measure of such ions. Also as above, this double resonance cycle may be repeated with different reaction time delay periods. By this means the thermal rate constant for the reaction as a function of the kinetic energy of the ions accelerated by the pulsed radio frequency electric field at the second frequency is readily determined.

The spectrometer includes a novel analyzer cell within which ions may be trapped for long periods of time on the order of 100 milliseconds, or greater. The cell includes a hollow electrode array comprising first, second and third pairs of opposite plates. A trapping potential of one polarity is applied to the one pair of opposite plates, and an opposite polarity trapping potential is applied the other two pair of opposite plates to provide an electrostatic potential well within the cell for trapping the ions for extended periods. Various experiments requiring extended ion trapping periods are possible utilizing the novel ion trap.

3,742,213

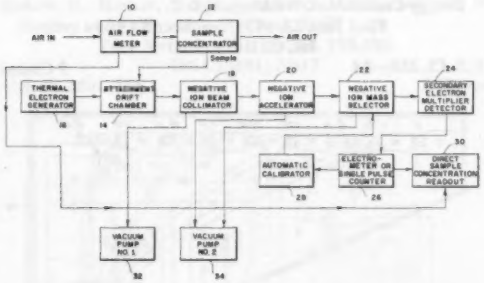
APPARATUS AND METHODS FOR DETECTING, SEPARATING, CONCENTRATING AND MEASURING ELECTRONEGATIVE TRACE VAPORS

Martin J. Cohen, West Palm Beach, and Robert W. Crowe, Lake Worth, both of Fla., assignors to Franklin Gno Corporation, West Palm Beach, Fla.

Continuation of Ser. No. 618,635, Feb. 27, 1967, abandoned. This application Jan. 28, 1971, Ser. No. 110,634

Int. Cl. H01j *39/34*; B01d *59/44*

U.S. Cl. 250—41.9 TF **18 Claims**



Apparatus and methods for detecting gases (such as those indicative of human activity) and for gas analysis, concentration, or purification. Negative ions formed by electron attachment to electronegative components of a gaseous sample are separated from neutral molecules and quantized. In one embodiment negative ions formed at atmospheric pressure are classified according to their mobility in an electric field and are collimated, accelerated, and detected in vacuo.

3,742,214

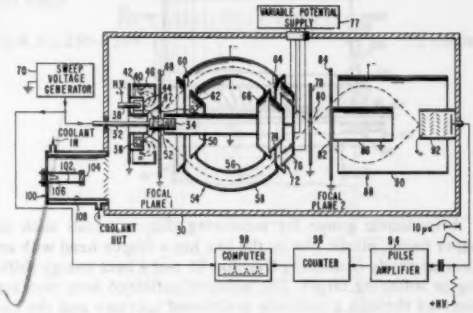
APPARATUS FOR PERFORMING CHEMICAL ANALYSIS BY ELECTRON SPECTROSCOPY

John C. Helmer, Menlo Park, and Norbert H. Weichert, Palo Alto, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 763,691, Sept. 30, 1968. This application Oct. 18, 1971, Ser. No. 190,265

Int. Cl. H01j *37/26*

U.S. Cl. 250—49.5 AE **40 Claims**



An electron spectrometer enabling the determination of the binding energies of the electrons surrounding the atoms of a given sample material. Novel sample irradiation apparatus, annular slit means and electron analyzing apparatus are disclosed including a novel arrangement which enables the electron spectrum to be swept without altering the parameters of the analyzer and further enables unusually large slit widths to be used in order to achieve extremely high instrument sensitivity.

3,742,215

METHOD AND APPARATUS FOR A SEMICONDUCTOR RADIATION DETECTOR

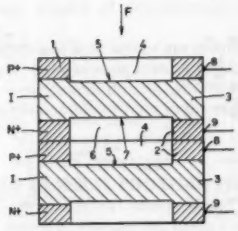
Johannes Meuleman, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,799

Claims priority, application France, Jan. 26, 1970, 7002619

Int. Cl. G01t *1/24*

U.S. Cl. 250—83 R **4 Claims**



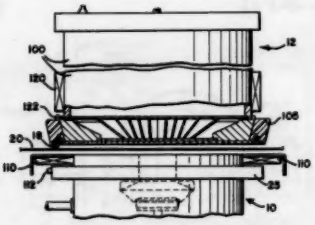
Semiconductor nuclear detector and method of manufacturing the same, the detector comprising a semiconductor crystal having two outer regions of opposite conductivity types and separated by an intermediate, intrinsic region and each having a recess; these recesses are located opposite each other and have substantially similar configurations. One recess serves as an entrance window for the radiation and has a depth at least equal to the thickness of the outer region concerned, whereas contacts are made at the peripheries of said outer regions. The depth of the recess opposite that serving as an entrance window for the radiation is at least equal to the thickness of the outer region in which it is provided.

3,742,216

NUCLEONIC GAUGE FOR MEASURING PROPERTIES OF THIN MATERIALS

Linus K. Hahn, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Nov. 17, 1969, Ser. No. 877,166
Int. Cl. G01n 23/16; G21f 5/02
U.S. Cl. 250—83.3 D 10 Claims



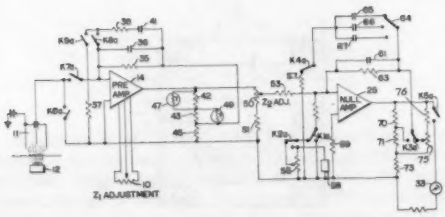
A nucleonic gauge for measuring thin materials such as paper tissue, plastic film or the like has a source head with an annular cavity containing Krypton 85 and a beta energy shifting or softening target. The softened reflected beta rays are directed through a centrally positioned aperture and the extent of interaction by the material under measurement in the pass gap is measured by a detector head. The source includes a shutter which forms a portion of the target material in the retracted position of the shutter. The shutter is axially movable into an aperture closing position. The target material is removable and interchangeable for selecting the desired degree of beta softening. Good sensitivity is maintained by reducing the air column in the head and in the detector, and by maintaining a temperature of both heads at substantially that of the material being measured.

3,742,217

NUCLEAR RADIATION GAUGE STANDARDIZING SYSTEM

Stephen L. Eakman, Framingham, and David F. Wood, Acton, both of Mass., assignors to LFE Corporation (formerly Laboratory for Electronics, Inc.), Waltham, Mass.

Continuation-in-part of Ser. No. 790,649, Jan. 13, 1969, abandoned. This application Jan. 18, 1971, Ser. No. 107,257
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 R 12 Claims



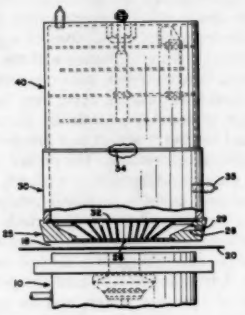
A nuclear radiation thickness gauging system including a radioactive source and an ion chamber connected through a switching arrangement to a preamplifier. The output signal from the preamplifier is a voltage signal having an amplitude representing the detector signal amplitude over the full range of operation. The system is arranged to produce two standardizing full amplitude signals, one for zero absorber conditions and one for maximum absorber conditions. The three signals are used in an output circuit to generate standardized measurement signals representing the thickness of a material being measured. The output circuit in one embodiment is a nulling measurement circuit which utilizes the standardizing signals to adjust the preamplifier characteristic and the system gain. In another embodiment the output circuit is a computer which standardizes the measurement signals mathematically.

3,742,218

AIR COLUMN DENSITY VARIATION INSENSITIVE NUCLEONIC GAUGING SYSTEM

John W. Fleming, Jr., Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Continuation of Ser. No. 877,196, Nov. 17, 1969, abandoned. This application Jan. 31, 1972, Ser. No. 222,171
Int. Cl. G01n 23/00, 23/16
U.S. Cl. 250—381 7 Claims



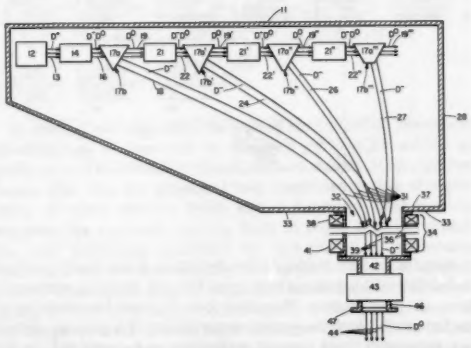
A nucleonic gauge includes a source in a sealed housing and a spaced detector and in which the space between the detector and the pass gap is substantially evacuated, and in which the space between the source and the source window is substantially evacuated to eliminate variations in air density in the air column which otherwise exists between the source and the detector. A standard ion chamber is employed for the detector with a second chamber inserted between the source and the ion chamber which may form part of the collimator which second chamber is pumped to a near vacuum. The arrangement maintains a reasonable spacing between the source and the detector and reduces the effects of vertical deflection on gauge sensitivity.

3,742,219

HIGH ENERGY NEUTRAL PARTICLE BEAM SOURCE

Charles C. Damm; John E. Osher, both of Alamo, and Richard F. Post, Walnut Creek, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 23, 1971, Ser. No. 155,984
Int. Cl. H01j 37/00
U.S. Cl. 250—84 9 Claims



An ion source directs a beam of low energy positive ions through a first gas charge exchange cell forming a beam of neutral particles with some negative ions therein. The neutral

particle component of the beam is then directed through an aligned series of similar charge exchange cells in each of which some of the neutral particles are converted into negative ions. A magnetic field is applied to the mixed particle beam emerging from each cell to deflect the negative ions so as to converge to form a common negative ion beam which is passed through a charged particle accelerator to yield a high energy negative ion beam then through a gas cell to strip electron therefrom forming a high energy neutral particle beam which may then be directed into the magnetic containment zone of a controlled fusion reactor to be ionized and trapped to form a plasma therein.

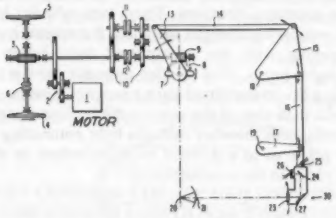
ERRATA

For Classes 250—106 and 250—391 see:
Patents Nos. 3,742,366 and 3,742,367

3,742,220
DRIVING MEANS FOR AUTOMATIC CURVED LINE FOLLOWING DEVICE

Toshiyuki Okuma, and Hisakuni Nagai, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Apr. 20, 1972, Ser. No. 246,021
Claims priority, application Japan, Apr. 20, 1971, 46/24963
Int. Cl. G05b *19/36*; G06k *11/02*
U.S. Cl. 250—202 **4 Claims**

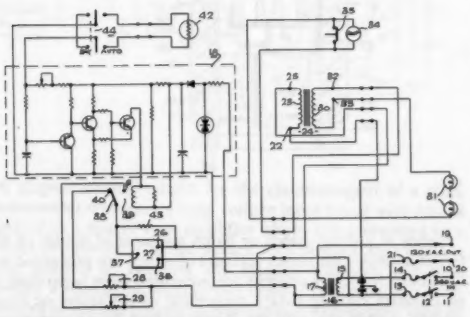


An optical detection system generates signals in response to line deviation of a steering wheel to selectively control clutches which transmit bidirectional motion to the steering wheel of the line following device.

3,742,221
INTENSITY CONTROL CIRCUIT FOR VISUAL APPROACH SLOPE INDICATOR INSTALLATION

Robert H. Horner, Huntington Beach, Calif., assignor to Hughey and Phillips, Inc., Burbank, Calif.

Filed Nov. 15, 1971, Ser. No. 198,506
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **7 Claims**

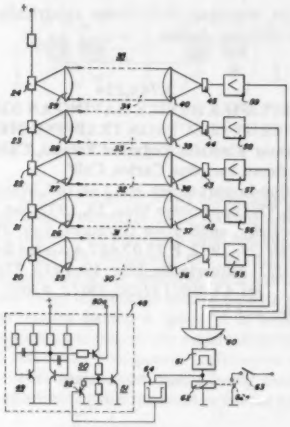


An improved light intensity control circuit for visual approach slope indicator (VASI) installations at airports is described which gives a continuously adjustable control of the VASI light intensity for two separate sets of operation; day operation and night operation; with low heat generation and long life in the control circuit.

3,742,222
PHOTOELECTRIC SENSING SYSTEM

Alfons Endl, c/o Endl Elektronik GmbH Co., Paul-Hasch-Strasse 40, 8 Munich 60, Germany

Filed Feb. 9, 1971, Ser. No. 114,001
Claims priority, application Germany, Feb. 20, 1970, P 20 07 840.4
Int. Cl. H01j *39/12*; G08b *13/18*
U.S. Cl. 250—209 **15 Claims**



A multiple light beam sensing system with pulsed light sources, plural light sensors and a digital circuit responsive to each of the sensors to detect the interruption of light to any sensor. One digital detector circuit uses an AND gate; and another has a series of bistable circuits actuated between stable states by pulses from the sensors. An output signal is present so long as no beam is broken. The interruption of one beam or the failure of any component is indicated by the loss of the output signal.

A current generator light sensor is shunted by an inductor which has a low impedance at the frequency of ambient light and a high impedance at the light source pulse repetition rate, providing a high degree of discrimination against ambient light.

The light source and light sensor are mounted adjacent each other at one side of the sensing area. A reflector is mounted at the other side. A single lens directs light from the source to the reflector and directs reflected light to the sensor.

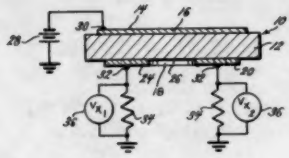
3,742,223
WIDE ANGLE LATERAL PHOTO-DETECTOR MEANS

Theodore G. Carr, Middlesex County, Mass.; Jon C. Richmond, Florrissant; James E. Dueker, St. Louis County, and Robert G. Wagner, University City, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 25, 1970, Ser. No. 40,227
Int. Cl. H01l *15/00*
U.S. Cl. 250—211 J **16 Claims**

A wide angle photo-detector device for use in optical systems including optical sighting, tracking and guidance systems, said detector including a semi-conductor wafer element having a transparent or semi-transparent conductive barrier forming layer on one surface thereof and one or more electrodes arranged on the opposite surface in such manner that when incident emitted or reflected light received from a remote location impinges on the rectifying barrier layer output signals will be produced at the said electrodes, which

signals are responsive to the location on the device where the



incident light impinges, and means electrically biasing and loading said detector device.

3,742,224

LIGHT AMPLIFIER DEVICE HAVING AN ION AND LOW ENERGY ELECTRON TRAPPING MEANS

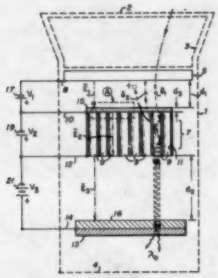
Bernard Caesar Einstein, Redwood Estates, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

Continuation-in-part of Ser. No. 124,107, March 15, 1971, abandoned. This application Mar. 23, 1972, Ser. No. 237,343

Claims priority, application Germany, Feb. 29, 1972, P 22 09 533.6; Feb. 29, 1972, P 72 07 607.4; Great Britain, Mar. 1, 1972, 9,642/72; Netherlands, Mar. 10, 1972, 7203218

Int. Cl. H01j *31/50, 39/12, 43/00*

U.S. Cl. 250—213 VT **27 Claims**



A light amplification device such as an image intensifier or low level sensing device is disclosed which includes a photocathode spaced from an aluminized target electrode and a microchannel plate intermediate said cathode and target. A thin non-self-supporting substantially optically transparent layer of material of a substance and thickness so as to be essentially transparent to high energy electrons, on the order of 100 to 1,000 electron volts, and light is situated atop the front end of the microchannel plate, covering the passages therein, in order to trap ions, which otherwise would travel to the photocathode, neutral gas ions, and to absorb scattered low energy electrons generated by secondary emission at the rim portion of the individual tubes in said microchannel plate, which would otherwise travel into the microchannel plate passages and to pass any light which passes through the photocathode and transmit any light which penetrates through the photocathode. The microchannel plate is spaced by a predetermined first distance from the photocathode, with its covered end facing the photocathode, and is spaced by a second distance, larger than the first distance, from the aluminized target electrode. A first voltage is applied between the photocathode and the microchannel plate and a second voltage, at least twice as great as the first voltage, is applied between the microchannel plate and the target electrode, and a third voltage is applied across the microchannel plate.

3,742,225

READER MECHANISM FOR OPTICALLY DISCERNIBLE CHARACTERS

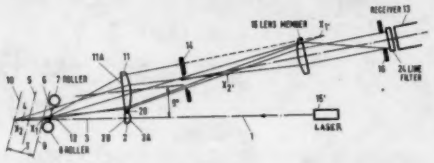
Erwin Sick, Jcking; Gernot Pinior, Germering, and Johann Plocki, Unterhaching, all of Germany, assignors to Zellweger AG Apparate-und Maschinenfabriken Uster, Uster, Switzerland

Filed Jan. 28, 1972, Ser. No. 221,704

Claims priority, application Switzerland, Mar. 22, 1971, 4239/71

Int. Cl. G01n *21/30;* **G06k** *7/00;* **G06m** *7/00*

U.S. Cl. 250—219 D **15 Claims**



A reader mechanism for optically discernible characters, especially characters associated with an article and applied thereat or thereto, wherein a transmitted beam linearly scans a reference plane and a received beam derived from a scanned character impinges upon a receiver which delivers an electrical output signal as a function of the light current of the received light beam. Two cylinder lens members are located at the region of the reference plane and extend parallel thereto and to the scanning direction. These two cylinder lens members each possessing a length sufficient for respectively operatively engaging with the transmitted light beam and the received light beam. One of the cylinder lens members is covered by a fine transmitted light beam and possesses a width which is less than that of the other cylinder lens member. This other cylinder lens member deflects light emanating from the reference plane or at a defined location before or after such reference plane to the receiver.

3,742,226

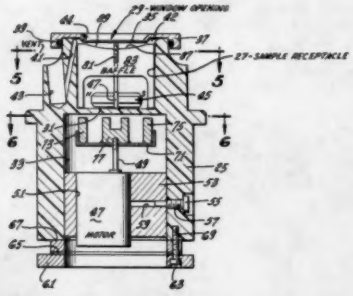
LIQUID CELL FOR X-RAY FLUORESCENCE ANALYSIS

Allan H. Smallbone, La Crescenta, Calif., assignor to Applied Research Laboratories, Inc., Sunland, Calif.

Filed May 14, 1971, Ser. No. 143,462

Int. Cl. G01n *21/00*

U.S. Cl. 250—51.5 **6 Claims**



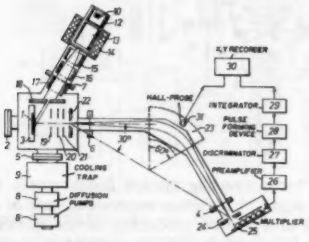
Solids in a slurry batch or batch mixtures of liquids of different densities the upper surfaces of which are presented in a liquid cell for X-ray analysis are prevented from separating by an impeller causing rotary movement of the slurry or liquid mixture within the cell; the liquid surface being maintained substantially planar by baffles which inhibit the creation of a vortical cavity.

3,742,227

PROCESS AND APPARATUS FOR THE MASS SPECTROMETRIC ANALYSIS OF SURFACES OF SOLIDS

Alfred Benninghoven, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 12, 1970, Ser. No. 88,747
Claims priority, application Germany, Nov. 14, 1969, P 19 57 311.6
Int. Cl. G01n 23/22
U.S. Cl. 250—282 9 Claims



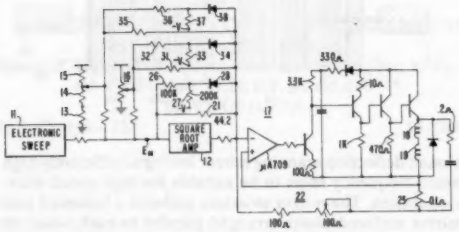
Surfaces of solids, in particular the uppermost monolayer, are analyzed by means of secondary ion spectrometry. The primary ion currents used for bombarding the surface of the solid are transmitted at such low current densities that the time required for disintegration of a monolayer, in particular the uppermost monolayer of the solid, is long compared with the time taken for recording a spectrum.

3,742,228

MAGNET CONTROL CIRCUIT UTILIZING SQUARE ROOT CIRCUIT AND ADDITIONAL COMPENSATION CIRCUIT

Russell S. Gutow, Jr., Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 4, 1971, Ser. No. 121,115
Int. Cl. B01d 59/48; G06g 7/20
U.S. Cl. 250—41.9 ME 9 Claims



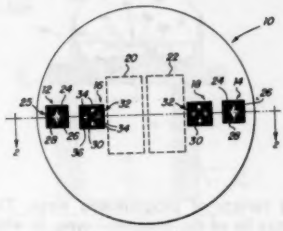
A magnet control circuit for the electromagnet of a mass spectrometer wherein a sweep voltage input linear with time is supplied to a square root amplifier where it is converted to a current proportional to the square root thereof, said current being utilized to energize the magnet windings and thus produce a change in magnet flux density rendering the mass numbers of the ion groups proportional to sweep time. One or more circuits are provided to by-pass the square root amplifier and produce a magnet current proportional to said sweep voltage to thereby compensate for a decreasing rate of flux density versus magnet current at higher magnet current levels.

3,742,229

SOFT X-RAY MASK ALIGNMENT SYSTEM

Henry I. Smith, Sudbury; David L. Spears, Acton, and Ernest Stern, Concord, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 29, 1972, Ser. No. 267,667
Int. Cl. G01n 21/34
U.S. Cl. 250—65 R 15 Claims



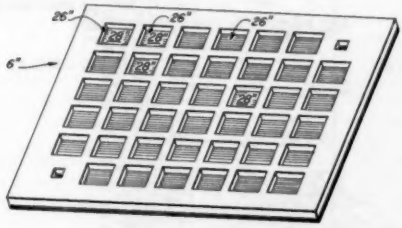
An alignment system for a soft X-ray lithographic system for aligning a mask with a substrate to be printed with a pattern including a first registration means on the mask and second registration means on the substrate; one of the registration means being a first soft X-ray absorber means of a predetermined form; the other registration means being a second soft X-ray absorber means having a space in it with the same predetermined form, and one of the registration means being carried over a soft X-ray transparent registration window on the mask, the other registration means being carried over a soft X-ray transparent registration window on the substrate.

3,742,230

SOFT X-RAY MASK SUPPORT SUBSTRATE

David L. Spears, Acton; Henry I. Smith, Sudbury, and Ernest Stern, Concord, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 29, 1972, Ser. No. 267,672
Int. Cl. G01n 21/34
U.S. Cl. 250—65 R 16 Claims



A soft X-ray mask support substrate including a thick peripheral support structure; a thin, taut membrane, transparent to soft X-rays and carried by the support structure covering the area within the periphery; and a soft X-ray absorber layer arranged in a predetermined pattern on the membrane within the periphery of the support structure.

3,742,231

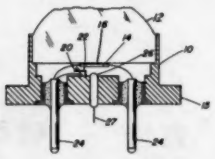
THERMISTOR BOLOMETER HAVING A BUILT-IN SOURCE

Seymour C. Spielberger, North Hempstead, N.Y., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Jan. 7, 1971, Ser. No. 104,717
Int. Cl. G01j 5/02
U.S. Cl. 250—338 6 Claims

A thermistor bolometer having a bolometer housing is provided with an active thermistor flake mounted in the housing

for providing a means of measuring radiation applied thereto. A light-emitting diode is mounted in the housing for applying radiation directly on the back of the active flake. The light-emitting diode provides a fully controllable source of radiant energy which may be utilized to test, calibrate, or function with the detector and the system in which the detector is em-



ployed in a variety of programmed ways. The thermistor bolometer may be of the immersed type, in which the active flake is mounted on an infrared window or lens, or may be of the solid-backed variety in which the solid-back substrate is transparent to the radiation applied to the back of the active flake by the light-emitting diode.

3,742,232

METHOD AND APPARATUS FOR EVALUATING THE OPERATION OF MACHINES FOR THE PRODUCTION AND/OR PROCESSING OF SMOKERS' PRODUCTS

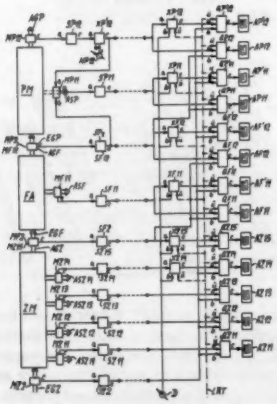
Jurgen Koehn; Gunter Wahle, and Frank-Dieter Lehmann, all of Wentorf, Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Mar. 30, 1971, Ser. No. 129,370

Claims priority, application Germany, Apr. 2, 1970, P 20 15 619.8

Int. Cl. G06f *15/46*

U.S. Cl. 235—151.3 **37 Claims**



The operation of a single machine or a group of two or more machines for the production and/or processing of smokers' products is monitored by detectors serving to measure the quantity of comminuted tobacco or filter material which is admitted at each inlet and discharged at each outlet of the machine or machines. The detectors produce electric signals for evaluation by a computer or by a system of totalizing, multiplying and/or dividing circuits which furnish indications of the ratio of admitted to discharged quantities of tobacco or filter material.

3,742,233

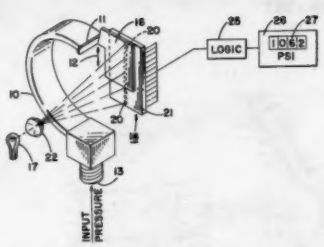
MOTION DISPLACEMENT TRANSDUCER

Joseph E. Gorgens, Trumbull; William A. Heske, Fairfield, and Randall Goff, Weston, all of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 20, 1971, Ser. No. 173,517

Int. Cl. G01d *5/34*

U.S. Cl. 250—231 R **18 Claims**



A transducer for converting motion displacement into a digital electrical signal. A radiation impervious vane or shield member secured to a motion producing device moves conjointly therewith in a motion path extending intermediate a predetermined radiation sensitive or emitting array pattern and a radiation source or sensor. Movement of the vane acts to interrupt the light beam between the source and sensor and the extent to which the beam is interrupted is a measured function of vane displacement. Continual updated logic count analysis of the array units interrupted by vane position produces an electrical digital output signal for remote utilization in correspondence to the logic count.

3,742,234

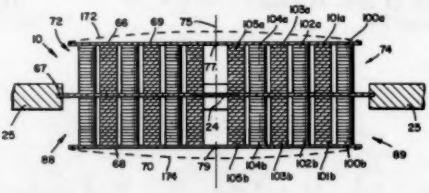
HIGH SPEED SMALL DEFLECTION INTERLACE MIRROR

Peter Laakmann, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 23, 1971, Ser. No. 155,955

Int. Cl. H01j *5/16*

U.S. Cl. 250—235 **11 Claims**

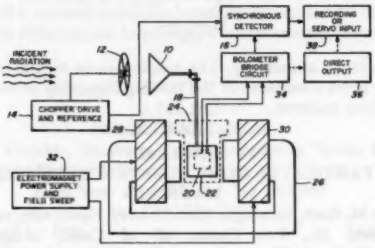


A small deflection scanning mirror having a sufficiently high resonant frequency so as to be suitable for high speed interlace operation. The mirror structure includes a balanced pair of mirror surfaced plates arranged parallel to each other on opposite sides of mounting plate and with a honeycomb core therebetween formed of an array of stacks of linear motion transducers or motors. Each stack may have selected numbers of the transducers connected either in series or in parallel or in series-parallel combinations. The stacks in the array are arranged to develop a deflection profile over the plates chosen for minimum bending of the surfaces while providing the required total deflection in response to drive waveforms of proper polarities. Because the drive is applied in a distributed manner, resonant frequency considerations apply mainly to the crystal structure of the stacks and the amount of distributed mass loading from the mirror plates, and the mirror size or total mass is no longer a significant resonant consideration.

3,742,235
BOLOMETRIC DETECTOR UTILIZING ELECTRON PARAMAGNETIC RESONANCE

Lynn A. Boatner, Duncanville, Tex., assignors to Advanced Technology Center, Inc., Grand Prairie, Tex. and Gray Tech Industries, Inc., Mohnton, Pa.

Continuation-in-part of Ser. No. 123,539, March 12, 1971, abandoned. This application Mar. 6, 1972, Ser. No. 232,017
Int. Cl. G01j *3/00*; B28b *7/04*; E04b *1/16*, *1/32*
U.S. Cl. 250—250 **22 Claims**

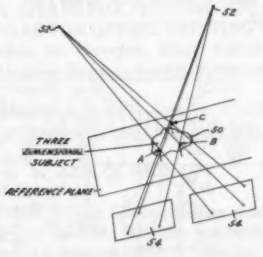


Bolometric techniques are employed in conjunction with electron paramagnetic resonance to detect electromagnetic radiation. A crystal doped with a rare earth ion, iron group ion, or free radical, selectively absorbs a certain bandwidth of frequencies from the incoming radiation effectively converts this energy to a temperature rise in the host material by means of spin-lattice relaxation mechanisms. Attached in intimate thermal contact with the paramagnetic resonant material is a sensitive bolometer element that responds to this temperature rise. The temperature rise and associated bolometer signal, is an effective monitor of the presence of incoming radiation incident on the doped crystal or free radical material. To produce human readable intelligence concerning the incoming radiation incident on the resonant absorber, the bolometer element intimately contacting the crystal is also made part of a bridge circuit or other measuring means having an indicating meter or digital readout circuitry. The resonance absoprtion frequency may be tuned magnetically over a significantly wide range. Either waveguide feeds or optical focusing may be used to direct the incoming radiation energy to the area of the doped crystal or free radical crystal. Depending upon the nature of the resonant absorber, the absorption band may be made narrow or broad and positioned anywhere from a few GHz to several thousand GHz.

3,742,236
METHOD AND APPARATUS FOR VARIABLE DEPTH LAMINAGRAPHY

Albert G. Richards, 395 Rock Creek Dr., Ann Arbor, Mich.

Filed Oct. 7, 1970, Ser. No. 78,880
Int. Cl. G01n *23/02*
U.S. Cl. 250—321 **13 Claims**

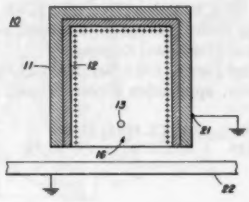


Method and apparatus for variable depth laminagraphy including means to be exposed with the subject to provide reference points on exposed film to facilitate the cutting of reference edges of the film, these edges serving to locate various film exposures relative to each other in a viewing apparatus designed to control relative shifting of the film to create laminal planes for inspection and study.

3,742,237
A. C. CORONA CHARGING APPARATUS

Delmer G. Parker, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 21, 1971, Ser. No. 136,125
Int. Cl. G03g *15/00*
U.S. Cl. 250—324 **7 Claims**

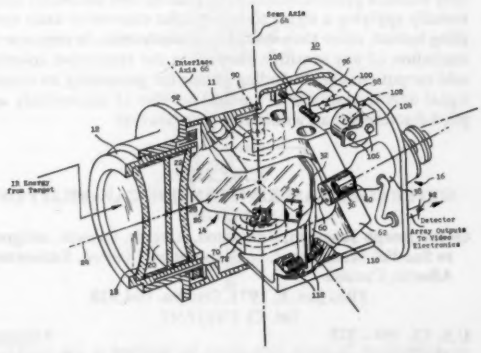


A method of increasing the current flow from an a.c. corona charging apparatus and the apparatus therefor are provided in accordance with the teachings of the present invention. According to one embodiment of this invention a.c. corona charging apparatus is provided with a corona discharge electrode and a dielectric shield disposed in partially surrounding relationship with respect to said corona discharge electrode. Conductive means is mounted on the external surface of said dielectric shield such that said conductive shield is contiguous with and collateral with said dielectric shield. The conductive means is adapted to be supplied with a reference potential such that when a corona generating a.c. voltage is applied to said corona discharge electrode an a.c. corona current is produced having a magnitude significantly in excess of that heretofore obtainable.

3,742,238
TWO AXES ANGULARLY INDEXING SCANNING DISPLAY

Richard G. Hoffman, II, Allen, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 14, 1970, Ser. No. 97,753
Int. Cl. G01j *1/04*
U.S. Cl. 250—347 **24 Claims**



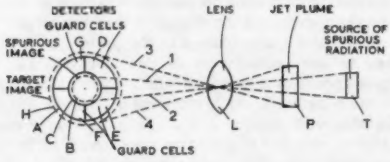
A radiant energy display system incorporating a reflecting surface mounted for rotation about scan and interlace axes, said scan and interlace axes positioned less than 90° from one another. Incoming radiant energy is scanned by the reflecting surface and reflected to a detector which is responsive to that

energy. Video processing circuitry interconnecting the detector with a light source array modulates the light source array which thereby emits a modulated visible beam. This beam causes modulation of a visible light source that in turn impinges upon the back portion of the reflecting surface. The back portion of the reflecting surface provides a scan identical to the front portion and by the above process produces a visible display.

3,742,239
DISCRIMINATING DEVICES

Frederick Henry Gale, Hillingdon, England, assignor to EMI Limited, Hayes, Middlesex, England

Filed June 6, 1961, Ser. No. 115,593
Claims priority, application Great Britain, June 9, 1960, 20,401/60
Int. Cl. H01j 39/00
U.S. Cl. 250—349 **2 Claims**



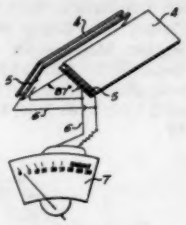
1. A target discriminating device comprising a plurality of radiation sensitive elements distributed in rows and columns over an image area, means for condensing incident radiation to form an image on said area, a plurality of row conductors corresponding to the rows of said sensitive elements, a plurality of column conductors corresponding to the columns of said sensitive elements, the row conductors being coupled to the column conductors by the sensitive elements in the respective rows and columns, means for sequentially sampling said column conductors to cause a signal to appear selectively in the row conductors in dependence upon the excitation of the said sensitive elements, an output channel common to said row conductors, coupling means including isolating two-state devices, one for each row conductor, arranged to pass a signal from the respective row conductor to the output channel once only within a predetermined time interval and means for additionally applying a signal to said output channel at each sampling instant, other than via the row conductors, in response to excitation of any sensitive element in the respective column, said output channel including means for generating an output signal only in response to a plural number of successively applied discrete signals within said time interval.

3,742,240
METER FOR MEASURING TANNING CAPABILITY OF SUNLIGHT

Oliver Joseph Jonasson, Edmonton, Alberta, Canada, assignor to Sundial Manufacturing Corporation Limited, Edmonton, Alberta, Canada

Filed Jan. 8, 1971, Ser. No. 104,928
Int. Cl. G01j 1/42
U.S. Cl. 250—372 **7 Claims**

The meter comprises a housing having a pair of angularly disposed apertures formed therein. A selenium photovoltaic barrier layer cell is mounted beneath each aperture. The cells are connected in parallel to a microammeter for measuring the current generated by them. A filter is provided over each aperture. This filter is adapted to pass only ultraviolet radiation having wavelengths between 300 and 390 millimicrons in amounts which are proportional to their tanning effectiveness

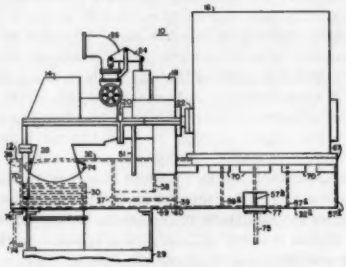


and relative abundance. The reading given by the microammeter gives a measure of the tanning capability of sunlight at any given moment.

3,742,241
FABRICATED BEDPLATE STRUCTURE FOR A MACHINE

James M. Gate, Saratoga; Allen D. Levy, Sunnyvale, and Louis Nunez, Jr., Los Gatos, all of Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1971, Ser. No. 192,469
Int. Cl. H02k 7/18
U.S. Cl. 290—52 **9 Claims**

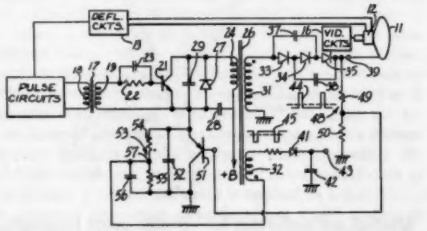


A fabricated bedplate for rigidly supporting a machine, especially a unitary turbine-generator power plant, in which the main strength member is a plate member having a cross section which is a segment of a circle. Transverse support members are welded to the main strength member to stiffen the latter against deformation from its circular shape.

3,742,242
HIGH AND LOW VOLTAGE REGULATING CIRCUIT

Minoru Morio, Tokyo; Tadahiko Suzuki, Yokohama, and Yutaka Nakagawa, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 8, 1972, Ser. No. 260,907
Claims priority, application Japan, June 9, 1971, 46/48560
Int. Cl. H02m 7/24; G05f 1/64
U.S. Cl. 307—17 **12 Claims**



A circuit is provided in which current pulses through a first semi-conductor device and through one winding of a trans-

former generate high voltage and low voltage pulses in two other windings. Rectifiers are connected to the latter two windings to produce high direct voltage and low direct voltage. A semi-conductor control device is connected to the high voltage rectifier circuit to respond to changes in the high voltage and is connected to the control device to adjust its output impedance as necessary to cause the amplitude of pulses applied to the transformer to increase when the high direct voltage tends to drop, thereby keeping the high voltage constant. However, in order to keep the magnitude of the low direct voltage from changing in response to changes in the pulse amplitude, the control semi-conductor is connected to the low voltage rectifier circuit to provide a compensating direct voltage.

3,742,243

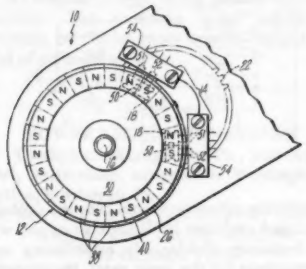
PULSE GENERATOR

John G. Gamble, Simsbury, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Filed Sept. 27, 1971, Ser. No. 183,945

Int. Cl. G01p *3/48*

U.S. Cl. 307—106 **14 Claims**



A rotary pulse generator having a magnetic readout head with a Hall sensor and a rotor cooperable with the readout head for applying an alternating magnetic field to the Hall sensor for producing an electrical signal for each predetermined increment of angular displacement of the rotor. In one version the rotor comprises a pair of spaced coaxial magnet rings providing in an axial gap therebetween an annular alternating magnetic field to be applied to the Hall sensor as the rotor rotates. In other versions, the magnetic readout head employs a bistable magnetic shunt which cooperates with equiangularly spaced teeth or poles of the rotor for applying an alternating magnetic field to the Hall sensor as the rotor rotates.

3,742,244

CONTROL MEANS FOR PRINTING APPARATUS, IN PARTICULAR FOR OFFSET PRINTING MACHINES

Hermann Raible, St. Georgen, Black Forest, Germany, assignor to Mathias Bauerle GmbH, Georgen, Black Forest, Germany

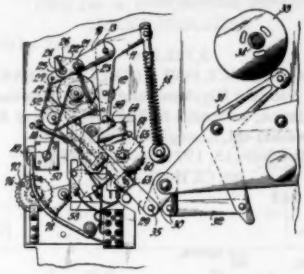
Filed Sept. 1, 1971, Ser. No. 176,930

Claims priority, application Germany, Mar. 5, 1970, P 20 10 434.1

Int. Cl. H02b *1/24*

U.S. Cl. 307—112 **10 Claims**

A control shaft for an offset printing machine, provided with cams, levers and the like for controlling the various operations during a printing cycle, is provided with a knob for manual rotation and with a ratchet wheel for step-by-step rotation by a pawl oscillated cyclically by a cam rotatable with one of the cylinders of the printing machine. The ratchet wheel has a number of switching ratchet teeth corresponding to the number of switching stages of the printing machine. Certain of the ratchet teeth have a sawtooth shape whereby, when engaged by the pawl, the ratchet wheel is advanced by one step. Other teeth of the ratchet wheel have a special shape including a protuberance on the flank leading to the radial portion of the tooth normally engaged by the pawl. These protuberances cause the pawl to travel out of its normal path of movement when engaged with one of these special form teeth. A spring biased locking disc is arranged adjacent the pawl and is axially displaceable by energization of an elec-



tromagnet. The locking disc is biased to engage beneath the ratchet pawl, when the pawl is displaced out of its normal path of movement due to engagement with a tooth of special shape, and the locking disc thereby prevents engagement of the pawl with the next succeeding tooth of the ratchet wheel even though the pawl continues to be oscillated. When the electromagnet is energized, the locking disc is axially displaced from its pawl blocking position, against the bias of a spring, allowing the pawl to again cooperate in a normal manner with the teeth of the ratchet wheel.

3,742,245

MOUNTING MEANS FOR A LEVEL SENSING DEVICE

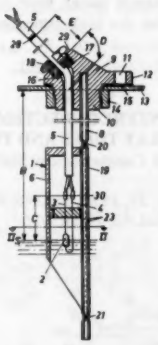
Jan-Ake Hallen, Partille, and Lars Stiernstrom, Goteborg, both of Sweden, assignors to Ingeniorsfirman Gunnar Abrahamson AB, Malmo, Sweden

Filed July 9, 1971, Ser. No. 161,115

Claims priority, application Sweden, July 9, 1970, 9522/70; Aug. 24, 1970, 11460/70

Int. Cl. H01h *35/18*

U.S. Cl. 307—118 **3 Claims**



There are a number of types and sizes of containers intended to hold liquids, and it is difficult to stock level sensing devices suitable to all requirements. To simplify mounting and make possible the adjustment of an apparatus to fit a large number of different installations a level sensing apparatus includes a contact device and an attachment, which are interconnected by a carrier slidably fitted to at least one of said

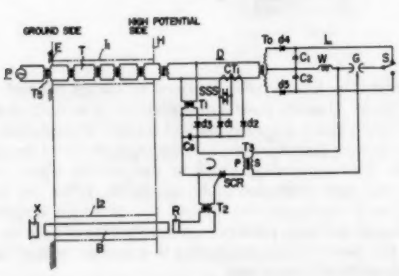
device or attachment. The carrier preferably is a rod provided with a scale to make possible a direct positioning of the device, and is further made of soft material or shaped in such a manner that it is easily deformed to both sides of the device, thereby definitely locking the latter in the desired position.

To make possible a check of the position of the apparatus, when the latter as been fitted into the container, a control member is fitted to the device and extends outside the container. This member is provided with a mark, and the distance between this mark and the wall of the container is a clear indication of the location of the device.

3,742,246
CONTROL DEVICE FOR A CIRCUIT BREAKER

Yoshio Nitta; Nobuaki Kiyokuni, and Kikuo Kawasaki, all of Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kawasaki-shi, Kanagawa-ken, Japan

Filed Nov. 15, 1971, Ser. No. 198,795
Int. Cl. H01h *47/00*
U.S. Cl. 307—143 **7 Claims**

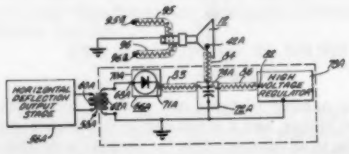


Described herein is a control device for a circuit breaker, which is so arranged that an electric power is supplied to a high potential side through an insulating transformer thereby to charge a capacitor, said capacitor being discharged by an operating signal thereby to start a switching operation at a great rate; in which a current limit device is provided on the ground side of the said insulating transformer as a result of which the insulating transformer can be made smaller, a switching operation can be achieved even in the re-charging period of the capacitor, and a recharging time of the capacitor is made shorter, and furthermore a pressure or stress wave propagating in an insulation bar is utilized so as to accurately transfer an operating signal issued from the ground side to a discharge gap placed on the high potential side without time delay.

3,742,247
HIGH VOLTAGE INTERCONNECTION SYSTEM FOR CATHODE-RAY TUBES AND THE LIKE

David E. Sunstein, 464 Conshohocken State Road, Bala-Cynwyd, Pa.

Filed Nov. 27, 1970, Ser. No. 93,017
Int. Cl. H02h *7/20*
U.S. Cl. 307—202 **6 Claims**

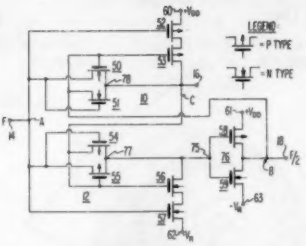


One or more linearly distributed resistance elements, such as flexible cables having an outer layer of high-voltage insulating material surrounding an inner continuous core of partially conductive material, are utilized as the interconnecting high-voltage wires in a high-voltage supply, whereby the intensities and frequencies of currents produced in the interconnecting wires upon the occurrence of an arc-over in the high-voltage supply are reduced below the values which would otherwise induce damaging effects in nearby sensitive elements such as transistors, semiconductor diodes or other similar solid-state devices. Similar linearly distributed resistance elements may also be used to connect to other elements to which arc-over from a high-voltage conductor may occur.

3,742,248
FREQUENCY DIVIDER

Sargent Sheffield Eaton, Jr., Phillipsburg, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 26, 1971, Ser. No. 192,242
Int. Cl. H03k *21/00*
U.S. Cl. 307—225 **10 Claims**

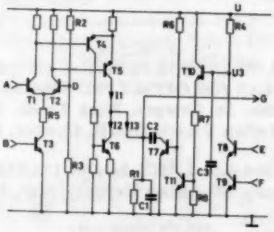


A circuit utilizing either two cross-coupled exclusive OR or two cross-coupled exclusive NOR logic gates and which functions as a frequency divider. By establishing appropriate operating conditions for the logic gates, the circuit is forced into a frequency division condition, e.g. a divide-by-two condition.

3,742,249
CIRCUIT FOR PHASE COMPARISON

Albrecht Gerlach, Emmendingen, and Rolf-Dieter Burth, Windenreute, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,897
Claims priority, application Germany, Mar. 26, 1970, P 20 14 692.3
Int. Cl. H03k *5/20*
U.S. Cl. 307—232 **4 Claims**

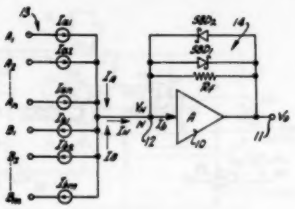


An apparatus and method for phase comparison wherein a local oscillator generates a delta voltage containing a D.C. component. The delta voltage is compared with a threshold voltage derived from the delta voltage, resulting in a control signal the polarity of which depends on the outcome of the comparison. This control signal sets the frequency of the local oscillator.

3,742,250
ACTIVE REGION LOGIC CIRCUIT

David T. Kan, Santa Clara, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Apr. 7, 1971, Ser. No. 132,143
Int. Cl. H03k 5/20
U.S. Cl. 307—237 5 Claims

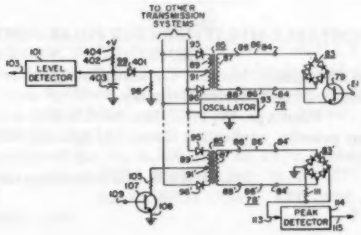


A logic gate including a transistor amplifier with back-to-back Schottky negative feedback diodes causes the input of the amplifier to form a current input summing junction. The Schottky diodes maintain the amplifier always in operating region with the output voltage swing limited by the diodes in each direction. The summing input junction provides weighted voting by use of input control signals of opposite polarity and of different weights.

3,742,251
POWER REGULATION SYSTEM

Francis T. Thompson, Murrysville, Pa., and Andre Wavre, Neuchatel, Switzerland, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 798,912, Feb. 13, 1969. This application Aug. 31, 1971, Ser. No. 176,594
Int. Cl. H03k 17/00
U.S. Cl. 307—242 8 Claims



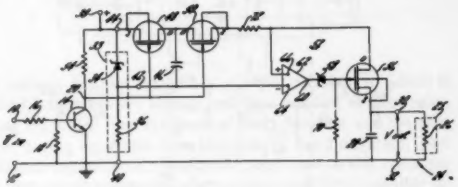
This invention contemplates a digital transmission circuit to effect transmission of digital signals in a high noise level environment. The circuit includes a transformer whose secondary is gated by a binary input and is effectively shorted in response to a first binary input to induce a large current flow within the primary, representative thereof. The secondary is effectively open circuited in response to a second binary input signal establishing a relatively small current within the primary winding, indicative thereof. The secondary gating circuit is formed from a transistor, diode bridge, parallel arrangement requiring no reference voltage, while a rectified oscillator voltage is coupled across the primary and the transmission output is conducted from a primary center tap to a level detector that reproduces the binary input for further communication.

A second embodiment includes a transformer having a rectified oscillator signal connected across its primary. The primary is gated at a center tapped location by a transistor gate which effectively opens the primary in response to a first binary input and closes the primary in response to a second binary input. The secondary circuit includes means for providing a signal proportional to the absolute value of the secondary current and means responsive thereto to provide a binary output representation of the input.

3,742,252
SIGNAL CONVERSION CIRCUIT

Richard Brzostek, Rockford, Ill., assignor to Woodward Governor Company, Rockford, Ill.

Filed Jan. 6, 1972, Ser. No. 215,859
Int. Cl. H03k 17/60
U.S. Cl. 307—246 12 Claims

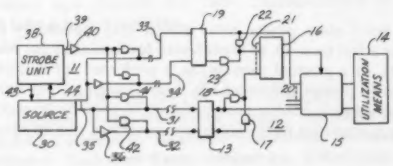


A circuit for producing successive pulses of equal charge content in response to successive cycles of an alternating input signal. A reference circuit supplied by a DC source establishes first, second and third voltages at successively higher DC levels. A capacitor referenced to the second DC level is selectively charged to the voltage at the third DC level during a first portion of each input cycle, while a load circuit referenced to the first voltage level is selectively controlled to provide a discharge path for the capacitor during a second portion of each input cycle, the respective voltage levels for the capacitor and the load circuit being such that the same amount of charge is transferred to the load circuit from the capacitor during each input cycle. In the preferred embodiment the load is a resistor-capacitor parallel combination so that the DC voltage developed across the load is proportional to the input frequency. Alternately, the load may be purely resistive or purely capacitive, in which case other characteristics of the load voltage vary in accordance with the frequency of the input signal.

3,742,253
THREE STATE LOGIC DEVICE WITH APPLICATIONS

Reinard Kurt Kronies, Glendora, Calif., assignor to Burroughs Corporation, Detroit, Mich.

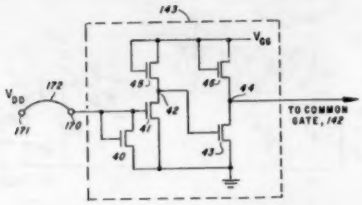
Filed Mar. 15, 1971, Ser. No. 123,959
Int. Cl. H03k 17/18
U.S. Cl. 307—247 4 Claims



An electronic circuit responsive to three combinations of binary input signals is disclosed. The circuit has two input terminals and two output terminals and is responsive to three combinations of binary input signals with the combination of two binary zeros following two binary ones being forbidden as an input to the circuit. The electronic circuit may advantageously be designed to be used as an RS flip-flop and is useful in the transmission of asynchronous information and

may be employed with a transmission gate on the input side which applies a binary one to each input when there is no data to be transferred through the electronic device or when there is inconsistent data from plural sources at the inputs of the device.

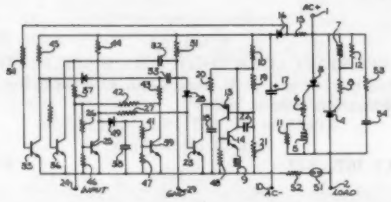
3,742,254
AUTOMATIC MOS GROUNDING CIRCUIT
W. S. Henrion, and Chang-Kiang Kuo, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 27, 1971, Ser. No. 110,083
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 **3 Claims**



An automatic grounding circuit has first and second insulated gate field effect transistor switches. The second transistor switch is coupled to the first transistor switch such that the second transistor switch is activated when the first transistor switch is grounded and deactivated when the first transistor switch is activated.

The second transistor switch transmits a voltage signal when the first transistor switch is activated and a ground signal when the first transistor switch is grounded.

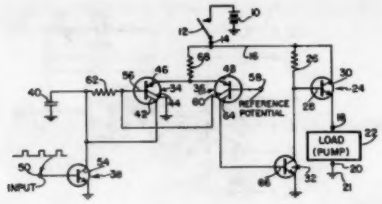
3,742,255
DUAL-MODE SOLID STATE RELAY
Carlile R. Stevens, 1000 Ironwood Place, Alamo, Calif.
Filed Oct. 12, 1971, Ser. No. 188,417
Int. Cl. H03k *17/72*
U.S. Cl. 307—252 T **8 Claims**



A solid state power relay which may optionally provide either a fast turn-on, as is preferred for luminous gas discharge lamps, or a gradual turn-on, as is preferred for incandescent lamps to prolong filament life. Interchanging from one mode to the other is readily accomplished to provide interchangeability in standard traffic signal controllers or like applications.

3,742,256
FUEL PUMP DRIVER CIRCUIT
Thomas M. Frederiksen, San Jose, Calif., and Ronald W. Russell, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 15, 1971, Ser. No. 189,580
Int. Cl. H03k *17/30*
U.S. Cl. 307—254 **10 Claims**

A fuel pump driver circuit for an internal combustion engine includes a voltage supply which energizes the fuel pump through an output or switch transistor. The output transistor is turned off to stop the pump by a control transistor, which is controlled by a differential amplifier or switch. The voltage supply is coupled through the ignition switch of the engine to the circuit, and the differential switch is in the on condition and causes the output transistor to conduct to energize the fuel pump. A capacitor is coupled to the differential switch and is charged thereby to actuate the differential switch to the

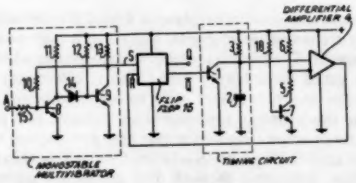


off condition to turn off the current to the fuel pump. When a signal responsive to the engine turning over is received, an input transistor discharges the capacitor and the differential switch is maintained in the on condition with one transistor thereof conducting and the current supply coupled to the fuel pump. Should the engine signal cease, the capacitor charges so that the differential switch actuates the control transistor to shunt the bias potential from the control electrode of the output transistor which applies the current to the fuel pump.

ERRATUM

For Class 307—260 see:
Patent No. 3,742,368

3,742,257
MONOSTABLE MULTIVIBRATOR PULSE-FORMING CIRCUIT
Ernst Wittenzellner, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Apr. 19, 1971, Ser. No. 135,011
Claims priority, application Germany, Apr. 23, 1970, P 20 19 804.3
Int. Cl. H03k *17/26*
U.S. Cl. 307—273 **3 Claims**



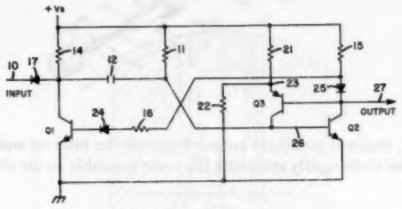
A noise-immune pulse-forming circuit which is a monostable multivibrator having a diode for dynamic feedback. A flip flop follows the diode. A timing circuit has a time-determining capacitor which has nearly no voltage across it in the quiescent state. The timing circuit resets the flip-flop via one input of a differential amplifier.

3,742,258

MONOSTABLE MULTIVIBRATOR WITH A LONG TIME CONSTANT AND AN AUXILIARY TRANSISTOR FOR ENSURING TURN-ON OF THE TRANSISTOR CONDUCTING IN THE STABLE STATE

Thomas E. Clark, San Mateo, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 23, 1971, Ser. No. 173,888
Int. Cl. H03k 3/10
U.S. Cl. 307—273 5 Claims



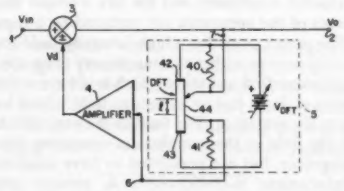
This monostable multivibrator includes a pair of NPN transistors arranged in the conventional manner with a capacitor connected to the collector electrode of the first transistor which conducts in the astable state, and with the capacitor and a first resistor connected to the base electrode of the second transistor which conducts in the stable state. The values of the first resistor and capacitor define the time constant that determines the time duration of operation in the astable state. The series combination of a second resistor and a third transistor which is a PNP type is connected in shunt with the first resistor, the base and collector electrodes of the third transistor being connected to the collector and base electrodes, respectively, of the second transistor. The third transistor facilitates rapid turn-on of the second transistor to terminate operation in the astable state and enables the resistance of the first resistor to be made larger than the conventional limiting value thereof that is determined by the base drive current in the second transistor and to thereby increase the time duration of the astable state.

3,742,259

ELECTRONIC BAND-PASS FILTER OR OSCILLATOR

Raymond George Donald, North Andover, and Walter Richardson Spofford, Jr., Bedford, Daniel Ira Pomerantz, Lexington, all of Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 6,380, Jan. 28, 1970, abandoned.
This application Jan. 20, 1972, Ser. No. 219,577
Int. Cl. H03k 17/00
U.S. Cl. 307—295 5 Claims



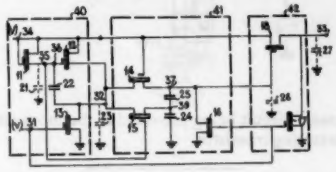
The disclosure is directed to an electronic band-pass filter having improved characteristics including high band-pass selectivity and a highly amplified output signal. The circuitry used in the filter system is particularly amenable to hybrid and/or monolythic integration, without the need for large external L-C components commonly found in present electronic filters. In the integrated form, the filter is easily adjusted for both selected frequency (fo) and gain and Q (figure of merit).

3,742,260

M. O. S. TRANSISTOR CIRCUITS FOR PULSE-SHAPING

Jean-Marie Boudry, Paris, France, assignor to SESCOSEM-Societe Europeenne de Semiconducterus et de Microelectronique

Filed May 6, 1971, Ser. No. 140,738
Claims priority, application France, May 13, 1970, 7017417
Int. Cl. H03k 17/60
U.S. Cl. 307—304 4 Claims



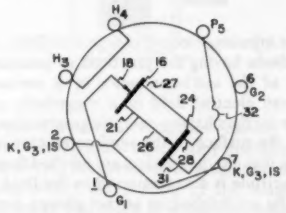
A voltage doubler comprises an input terminal to which is applied a square wave voltage, taking a positive voltage value during recurrent time intervals of fixed duration and the zero value, during recurrent time intervals of fixed duration. Two resistance capacitance circuits are connected to this terminal. The first circuit comprises a first resistor and first capacitor series connected between the ground and the input terminal. The second circuit comprises a resistor, a diode series connected between the input terminal and the output terminal, and a capacitor connected in series with the capacitor of the first circuit between the output terminal and the ground. The time constants of the first and second circuits are appropriately chosen.

3,742,261

SOLID STATE VACUUM TUBE REPLACEMENT

Emery J. Schneider, Sunnyvale, and Bruce G. Burman, Cupertino, both of Calif., assignors to Teledyne, Inc., Mountain View, Calif.

Filed Oct. 6, 1971, Ser. No. 187,006
Int. Cl. H03f 3/16
U.S. Cl. 307—304 5 Claims



A solid state assembly and base which can be plugged as a replacement directly into a vacuum tube socket in a vacuum tube circuit and provide the same characteristics as the vacuum tube which it replaces.

3,742,262

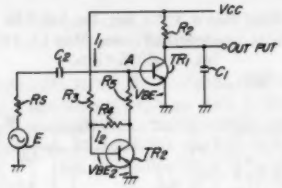
TRANSISTOR DETECTING CIRCUIT

Eisuke Ichinohe, Kitakawachi-gun, Osaka; Noriyoshi Kubo, Asahi-ku, Yokohama; Kazuhiro Nakamura, Kohoku-ku, Yokohama; Yoshinori Endo, Midori-ku, Yokohama, and Takeshi Katano, Kawasaki-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Lt.d, Osaka, Japan

Filed Sept. 16, 1971, Ser. No. 181,033
Claims priority, application Japan, Sept. 18, 1970, 45/82355
Int. Cl. H03k 17/00
U.S. Cl. 307—310 2 Claims

A transistor detecting circuit provided with a detecting sensitivity compensation transistor circuit having a compensation

transistor and a resistance circuit connected between the base and collector of the compensation transistor, said compensation transistor circuit being provided in the input circuit leading to a detecting transistor.



3,742,263

CHARGE EMITTING DEVICES

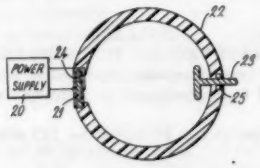
Alfred William Bright, Highfield; Brian Makin, Botley, and David Robert Lamb, Eastleigh, all of England, assignors to National Research Development Corporation, London, England

Filed Apr. 19, 1971, Ser. No. 134,967

Claims priority, application Great Britain, Apr. 24, 1970, 19,844/70

Int. Cl. G01r *27/02*; **H02n** *1/00*

U.S. Cl. 310—5 **9 Claims**



A device for injecting electric charge into fluids consists of a p-n junction diode having the junctions so positioned that an active region of the semi-conductor is in contact with the fluid. A reverse electric field of a magnitude sufficient to release charge carriers having energies greater than the potential barrier at the surface of the semi-conductor is applied to the junction so that charge carriers are emitted from the active region. An electrode is also immersed in the fluid to enable a drift field to be established to attract charge carriers in the fluid away from the surface of the semi-conductor.

3,742,264

MINIATURE, BEARINGLESS TACHOMETER GENERATOR WITH WEDGE COUPLING FOR RIGIDLY ATTACHING THE ROTOR TO THE DRIVE SHAFT

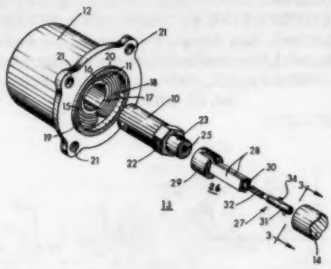
Richard Edwin Anderson, Lynn, and Harry Gustav Swanson, Tewksbury, both of Mass., assignors to General Electric Company, Wilmington, Mass.

Filed July 3, 1972, Ser. No. 268,530

Int. Cl. H02k *15/00*

U.S. Cl. 310—42 **6 Claims**

An AC tachometer generator has a miniature, light weight rare earth permanent magnet rotor attached to a rotating shaft, the speed of which is to be measured. The rotor is supported without the use of bearings by rigidly attaching the rotor to the driving shaft by means of a wedge assembly. The coupling comprises a resilient, slotted wedge of square cross-section having a central bore which receives a tapered rod, one end of which is threaded. The threaded end is secured to the tachometer rotor. The square wedge is inserted in a corresponding opening in the driving shaft and turning of the rotor moves the tapered rod axially down the bore forcing the slotted, resilient members outward against the interior wall of the drive shaft rigidly attaching the rotor assembly to the shaft.



3,742,265

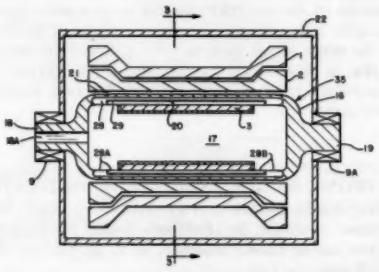
SUPERCONDUCTING APPARATUS WITH DOUBLE ARMATURE STRUCTURE

Joseph L. Smith, Jr., Concord, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 25, 1972, Ser. No. 256,962

Int. Cl. H02k *19/00*

U.S. Cl. 310—52 **19 Claims**

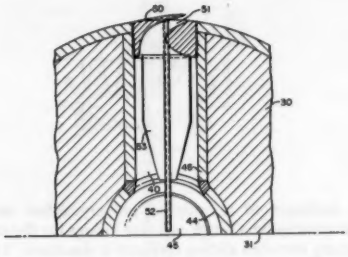


Rotating electric machinery and the like wherein the magnetic iron cores of the apparatus are replaced by a superconductor winding which provides a high intensity field for electromagnetic interaction within the machinery. The apparatus described contains a first armature which is always wound and which, when energized, has an armature field which has motion relative to the armature. The field of the superconducting winding and the field of the armature in operating apparatus are locked together, but are permitted to have small relative angular displacement therebetween. A second armature which may or may not be wound, depending upon the particular embodiment of the apparatus is disposed in the gap between the superconducting winding and the wound armature. The second armature carries electric currents induced or otherwise created therein, these electric currents interact with the field in the gap to create mechanical forces upon the second armature. These forces are reaction-type forces and equal and opposite to the reaction occurring upon the wound armature thereby removing all or substantially all reaction forces from the superconductor winding.

3,742,266
LIQUID COOLED ROTOR FOR DYNAMOELECTRIC MACHINES

Paul R. Heller, Murrysville; Sui-chun Ying, and James E. Luzader, both of Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 21, 1971, Ser. No. 182,367
Int. Cl. H02k *9/20*
U.S. Cl. 310—54 **3 Claims**

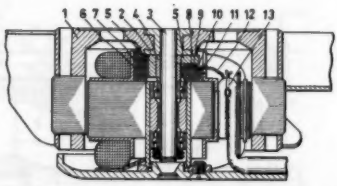


A liquid cooled rotor for dynamoelectric machines in which a coolant liquid such as water circulates through passages in the rotor winding and is discharged through an axial bore and radial passages in the rotor shaft, with a vent tube extending through at least one of the radial passages for venting air or other gases from the region of the rotor axis.

3,742,267
FAN ARRANGEMENT HAVING AUTOMATIC CONTROL CAPABILITY

Georg F. Papst, and Hans-Dieter Papst, both of Georgen, Germany, assignors to Papst-Motoren KG, Georgen, Germany

Filed Sept. 23, 1970, Ser. No. 74,604
Claims priority, application Germany, Sept. 27, 1969, P 19 48 906.6
Int. Cl. H02k *7/00*
U.S. Cl. 310—67 **4 Claims**



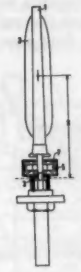
A fan arrangement with a motor for rotating the impeller thereof. A signal generator for producing an electrical signal in accordance with the rotational speed of the impeller. The generator including a stationary claim-pole unit with a pickup member. The rotor including a multi-pole permanently magnetized ring positioned outwardly of the claw-pole unit.

3,742,268
INDIVIDUAL DRIVE FOR TEXTILE MACHINE SPINNING SPINDLE

Wolfgang Volkrodt, Muhlbach, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed June 2, 1971, Ser. No. 149,260
Claims priority, application Germany, June 3, 1970, P 20 27 134.5
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 **2 Claims**

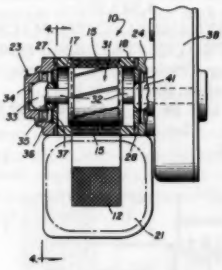
A spinning spindle of a textile machine is individually driven by a two-pole electric motor. The motor has a stator and a rotor rotatably journalled in the stator and coupled to the spindle. The stator includes a stator yoke and a flat ring winding surrounding the yoke.



3,742,269
ELECTRICAL SUB-FRACTIONAL MOTOR WITH ENCAPSULATED ROTOR

Frank Holper, Cary, and Ronald A. Thon, Palatine, both of Ill., assignors to Molon Motor & Coil Corp., Rolling Meadows, Ill.

Filed Sept. 3, 1971, Ser. No. 177,714
Int. Cl. H02k *1/04*
U.S. Cl. 310—43 **3 Claims**



A sub-fractional electrical induction motor, particularly adapted to use in xerographic office copy machines and other applications involving the presence of quantities of non-explosive magnetic powder; the portion of the magnetic stator frame encompassing the rotor is integrally mounted into a plastic seal block, sealing all sides of an axial rotor opening except for two open ends. The rotor shaft is supported in bearing brackets that extend across the open ends of the rotor opening and that are tightly engaged with the seal block and sealed to the seal block by two gaskets, thus effectively encapsulating the rotor.

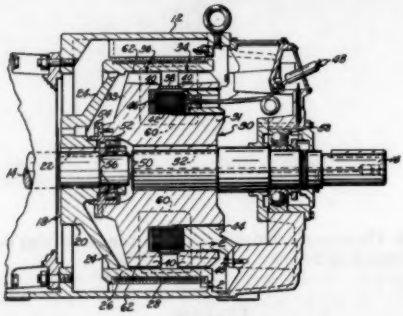
3,742,270
SINGLE SUPPORT EDDY CURRENT COUPLING

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 2, 1971, Ser. No. 204,111
Int. Cl. H02k *49/02*
U.S. Cl. 310—105 **5 Claims**

An electromagnetic coupling includes rotatable input and output members, a stationary annular coil supported b a stationary field member, an inductor drum connected to one of the input and output members for rotation therewith and a pole member connected to the other of the input and output members for rotation therewith. The inductor drum is supported only at one end thereof by the one member. The pole member includes first and second annular sets of projections

thereon with the projections of the first set having one polarity and the projections of the second set having a polarity opposite the one polarity when the coil is energized. The annular sets of projections are located between the annular coil and the inductor drum. When the coil is energized a flux path is established through the field member, through the first set of



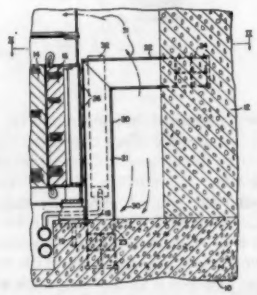
annular projections, through the inductor drum, through the second set of annular projections and back to the field member to operatively connect the input and output members. The present construction produces a reliable coupling having a torque transmitting capacity which is generally greater than the torque transmitting capacity of other similar sized couplings.

3,742,271

VERTICAL DYNAMOELECTRIC MACHINE WITH IMPROVED STATOR SUPPORT

Eugene C. Whitney, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1971, Ser. No. 189,884
Int. Cl. H02k *5/00*
U.S. Cl. 310—157 **2 Claims**



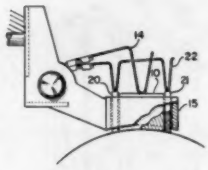
In a vertical dynamoelectric machine, such as a waterwheel generator, primary support is here provided by a rigid foundation and upstanding wall concentric with the machine elements, where the foundation and wall are of a material such as concrete. To permit limited movement of the stator core caused by thermal expansion and contraction of the stator core and by magnetic pull, there are a plurality of rigid beams surrounding the core, each having a vertical portion with its lower end embedded in the foundation and a radial portion with its outer end embedded in the wall. The stator is joined to the vertical portion by means of both radial and tangential members that are flexible compared with the wall and the stator. In this way secure support is provided while permitting changes in position due to thermal effects and magnetic forces without causing damage as would occur in normal construction where such vertical dynamoelectric machines are made of large size.

3,742,272

SPARK-SUPPRESSING BRUSH-BRUSH HOLDER ASSEMBLY FOR ROTATING MACHINES AND SLIDING CONTACTS

Donald P. Shattuck, Scotia, and John D. Harnden, Jr., Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 10, 1971, Ser. No. 176,852
Int. Cl. H02k *13/06*
U.S. Cl. 310—220 **29 Claims**



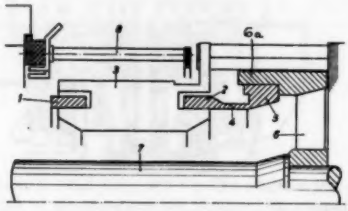
The inclusion of a body of polycrystalline metal oxide varistor material in a brush or brush holder for the suppression of sparking between sliding contacts is disclosed. The body of metal oxide varistor material may form part of a brush contact at a leading or trailing edge thereof or may be the material comprising all, or part of a brush holder in slidable contact with the brush contact and a second contact. Accordingly, the initial electrical connection and, or the final electrical connection, between the brush contact and the other slidable contact is through the varistor material thereby reducing sparking as the sliding contacts make and break connection.

3,742,273

STRUCTURE FOR SUPPORTING A COMMUTATOR ASSEMBLY ON THE ROTOR OF A DYNAMO-ELECTRIC MACHINE

Werner Heil, Birr, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Nov. 29, 1971, Ser. No. 202,995
Claims priority, application Switzerland, Dec. 3, 1970, 17931/70
Int. Cl. H02k *13/04*
U.S. Cl. 310—236 **4 Claims**

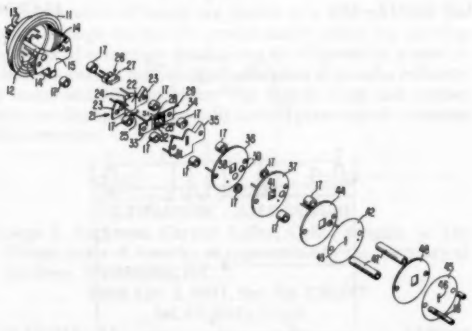


Structure for supporting on the rotor shaft of a dynamoelectric machine a commutator composed of a cylindric assembly of commutator bars includes first and second shrink collars shrunk into place in annular recesses provided respectively at opposite ends of the commutator, and a third shrink collar integral with the second collar and inter-connected with the latter by means of a thin-walled tubular part which is elastic in the radial direction. The commutator is secured to the rotor shaft by means including the third shrink collar, and the thin-walled inter-connecting part which together with the second and third shrink collars is fabricated from a single piece of metallic material, due to its radially elastic characteristic serves to accommodate a change in diameter of the first and second shrink collars caused by heating and expansion of the commutator without affecting the diameter of the third shrink collar. The commutator is also free to expand axially in the direction of the first shrink collar by virtue of nonattachment to the rotor shaft.

3,742,274
NEUTRON DETECTOR
Martin J. O'Boyle, Export, and Richard J. Nodvik, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 4, 1971, Ser. No. 112,658
Int. Cl. H05h
U.S. Cl. 313—61 4 Claims

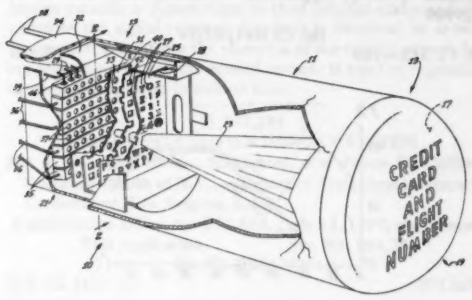
The employment of the isotope Pu–238, or its target material NP–237 in conjunction with Pu–238, is disclosed herein in combination with other fertile, fissile, and fissionable isotopes as an economically feasible regenerative material for use in detectors of the neutron detector type; more particularly, for use in miniature fixed in-core fission chambers, to extend the operating lifetime of the chamber.

3,742,275
ION SOURCE HAVING IMPROVED ION BEAM ALIGNMENT AND FOCUS STRUCTURE
Russell S. Gutow, Jr., Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Mar. 4, 1971, Ser. No. 121,114
Int. Cl. H05j 27/00
U.S. Cl. 313—63 2 Claims



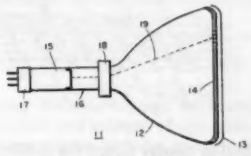
An ion source comprising a plurality of components arranged along the ion beam path including a source body, repeller and extractor electrodes, a lens structure including an alignment electrode and a focus electrode, and an aperture plate. Certain of the components are made from common parts including the alignment and focus electrodes, each of which is formed by a metallic disk having a rectangular aperture centrally disposed therein but located slightly off axial center. The two electrodes are mounted along the beam path so that the two apertures are off-set in mutually opposite directions. Only a portion of the aperture of each electrode is aligned along the beam axis through which the beam passes for alignment and focussing.

3,742,276
CATHODE RAY TUBE WITH REAR PROJECTION READOUT
Donald G. Gumpertz, Van Nuys, Calif., assignor to Industrial Electronic Engineers, Inc., Van Nuys, Calif.
Filed Mar. 30, 1972, Ser. No. 239,535
Int. Cl. H01j 29/46
U.S. Cl. 313—86 15 Claims



A display tube for selectively providing a visual display of a plurality of characters, including a vacuum envelope with a display screen at one end thereof and a plurality of columns of first means providing a source of electrons at the other end thereof. An apertured mask disposed between the first means and the display screen energizable to accelerate the electrons into a different stream of electrons for each of the characters. A plurality of rows of grid control boxes disposed between the first means and the apertured mask each of the rows controlling a portion of the electrons provided by each of the columns of first means by inhibiting the effect of the apertured mask on the controlled portions. The rows of grid control boxes and columns of first means individually energizable so that a single stream of electrons is accelerated and a single one of the characters is displayed, wherein the number of characters displayable is equal to the product of the number of rows and the number of columns.

3,742,277
FLYING SPOT SCANNER HAVING SCREEN OF STRONTIUM THIOGALLTE COACTIVATED BY TRIVALENT CERIUM AND DIVALENT LEAD
Thomas E. Peters, Chelmsford, Mass., assignor to GTE Laboratory Incorporated, Waltham, Mass.
Continuation-in-part of Ser. No. 838,170, July 1, 1969, abandoned. This application Mar. 18, 1971, Ser. No. 125,611The portion of the term of this patent subsequent to Nov. 30, 1988, has been disclaimed.
Int. Cl. H01j 29/20, 31/12; C09k 1/12
U.S. Cl. 313—92 PH 1 Claim



A flying-spot scanner tube for use in a color flying-spot scanner system. The tube has a phosphor screen wherein at least one of the phosphors included therein comprises a cerium and/or lead activated alkaline earth thiogallate phosphor.

3,742,278
LOW-PRESSURE MERCURY-VAPOR GAS-DISCHARGE LAMP WITH AMALGAM

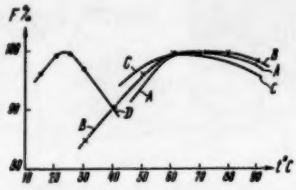
Jury Iosifovich Shindelman, ulitsa Kalinina, 3, kv. 57; Galina Iosifovna Akulova, ulitsa Tsiolkovskogo, 37, kv. 63; Galina Grigorievna Snitka, ulitsa Birjuzova, 31, kv. 2; Nikolai Ivanovich Vasyagin, ulitsa Zygina, 42, kv. 54, and Vladimir Vasilievich Tyabirdin, ulitsa Zygina, 42, kv. 45, all of Poltava, U.S.S.R.

Filed Apr. 22, 1971, Ser. No. 136,482

Claims priority, application U.S.S.R., May 25, 1970, 1429909

Int. Cl. H01j *61/24*

U.S. Cl. 313—109 **2 Claims**



Low-pressure mercury-vapor gas-discharge lamps, particularly fluorescent ones, of high intensity and high specific power, containing an amalgam of the formulation:

mercury	15 – 20 at. per cent
cadmium	53 – 38 at. per cent
tin	20 – 25 at. per cent
bismuth	12 – 17 at. per cent

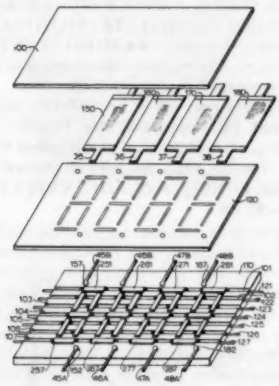
3,742,279
SEGMENTED ELECTRODE DISPLAY PANEL HAVING CLOSED STRUCTURE

George A. Kupsky, Milford, and Robert E. Kollmyer, Middlesex, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 10, 1971, Ser. No. 114,182

Int. Cl. H01j *7/42*

U.S. Cl. 313—109.5 **6 Claims**



Multiple position display panels for displaying one or more characters side-by-side in one or more rows and including a plurality of parallel elongated conductors bearing a plurality of flat cathode segments along their length and an anode associated with each group of the display segments. Portions of the cathode-connecting conductors are offset and are disposed within grooves or depressions in an insulating sheet or are embedded in an insulating layer where the cathode elements cross them. A slotted insulating sheet is disposed between the cathode elements and the anodes, the slots being aligned with the cathodes, and the assembly is sealed in a gaseous atmosphere at a suitable pressure.

3,742,280
PRE-IGNITION GAP FOR COMBUSTION ENGINE IGNITION SYSTEMS

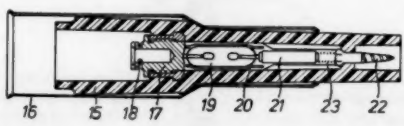
Gert Siegle, Renningen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 12, 1971, Ser. No. 198,228

Claims priority, application Germany, Nov. 16, 1970, P 20 56 235.0

Int. Cl. H01t *13/54*

U.S. Cl. 313—118 **31 Claims**



An ignition system for combustion engines includes a pre-ignition gap which consists of a closed compartment and a pair of electrodes in the compartment, the ends of the electrodes being spaced from each other. A gas which is chemically inert relative to the electrodes surrounds the electrodes at a pressure of between 1 and 10 atmospheres and, after each spark, allows an after-discharge between the electrodes without sparking. The free ends of the electrodes are spaced apart at a distance of between 1 and 5 mm and at last in the region of the free ends the electrodes are composed of a material which is resistant to vaporization and disintegration.

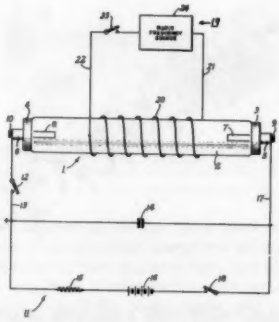
3,742,281
CONTROLLED SPECTRUM FLASH LAMP

John A. McInally, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,737

Int. Cl. H01j *61/18*

U.S. Cl. 313—184 **11 Claims**



A high intensity inert gas flash lamp adapted to be operated with a predetermined energy imput, said lamp comprising a sealed elongated envelope formed of light transmitting material having a high melting point, electrodes operatively disposed within said envelope and adapted to sustain a pulsed arc discharge therebetween, a predetermined amount of a rare gas disposed within said envelope and a predetermined amount of at least one ionizable low vapor pressure metal or metal compound additive disposed on the tube wall, the relationship of the dimensions of said envelope and the amount of metal or metal compound additive in said envelope being such that

during operation of said lamp sufficient power is supplied accorss the electrodes to form a shock wave of sufficient amplitude to evaporate substantially all of said ionizable additive material from the tube wall, providing high intensity flash illumination, the emission range of which can be tailored by the addition of several emission modifying additives in combination.

3,742,282
ELECTRODES

Gert Siegle, Renningen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

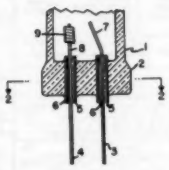
Filed Aug. 3, 1971, Ser. No. 168,748
Claims priority, application Germany, Aug. 4, 1970, P 20 38 645.2
Int. Cl. H01j *17/04, 1/02*
U.S. Cl. 313—311 **9 Claims**

Electrodes particularly adapted for use in gas filled spark gap and discharge containers comprising a material resistant to sputtering and vaporization consisting of at least one nitride of a metal of the group consisting of Hf, Zr and Ta and having an O_2 content bound as an oxide or oxynitride of less than 5 weight percent and a content of further impurities of less than 1.5 weight percent.

3,742,283
PRESS SEAL FOR LAMP HAVING FUSED SILICA ENVELOPE

Frederick A. Loughridge, Manchester, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 28, 1971, Ser. No. 193,520
Int. Cl. H01j *5/46, 5/50*
U.S. Cl. 313—318 **5 Claims**

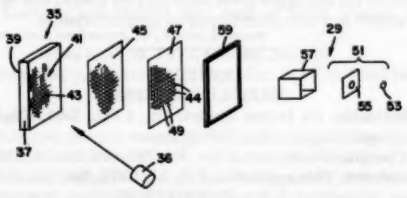


Lead-in wires of lamps are sealed in a vitreous silica envelope through the use of a graded seal in which two abutting segments of refractory metal wires are disposed in a tube or tubes of a cermet formed of an admixture of powder refractory metal and vitreous silica. The lead-in wires and cermet tubes are disposed in a specially formed press seal of a vitreous silica envelope.

3,742,284
ULTRASONIC CAMERA TUBE

George L. Sackman, Carmel Valley, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1971, Ser. No. 130,697
Int. Cl. H01g *3/48*
U.S. Cl. 315—11 **7 Claims**

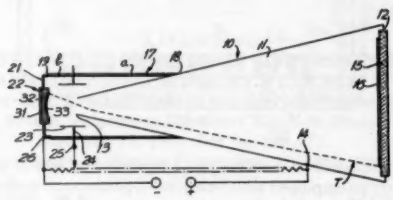


An ultrasonic camera tube for converting a two-dimensional pattern of sound pressure into an electrical signal which may be displayed by a television picture tube as an equivalent light pattern. The camera tube includes a piezoelectric transducer for converting the sound pressure pattern into an electrical charge pattern. A photocathode mosaic is deposited on the inner face of the transducer. The photocathode mosaic is flooded with light to achieve photoemission of electrons. The charged mosaic elements discharge in vacuum through an adjacent grid and proceed onward to charge the capacitive storage elements on a mosaic screen adjacent to the grid. An electron beam then scans the elements of both cathode and screen mosaics to return them to their original states and also provides the signal readout. Readout is obtained by sensing the current taken from the elements of the mosaic screen during scanning wherein the sensed current is used to reproduce the sound image on a television tube.

3,742,285
IMAGE INTENSIFIER DISPLAY SYSTEM

Jan J. Van Der Sande, Manhasset, and Johan H. Deitrap, Smithtown, both of N.Y., assignors to Astrophysics Research Corporation, Los Angeles, Calif.

Continuation of Ser. No. 832,584, June 12, 1969, abandoned. This application , Ser. No. 184,285
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 **29 Claims**

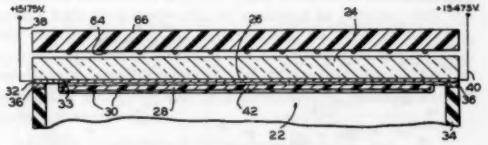


This invention relates to the art of imgge intensifier display systems including an electronic image intensifier display tube having fiber optic input window with an electron omitting surface and a display window of larger diameter having a phosphor coated surface to provide a magnified image of a scene being viewed.

3,742,286
FAST WRITING BISTABLE STORAGE TUBE AND METHOD OF OPERATION

Roger A. Frankland, and Christopher J. Curtin, both of Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed May 4, 1970, Ser. No. 34,072
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 **14 Claims**



A direct viewing bistable storage tube employing post deflection acceleration and method of operation is described in which the storage target includes a contacting collector mesh electrode and a target electrode provided on opposite sides of a phosphor storage dielectric. A more positive voltage is applied to the target electrode than to the collector electrode during writing. The result is an increase of the maximum stored writing speed of four to five times, apparently because the secondary electrons produced within the phosphor storage dielectric by the writing beam are attracted toward the target

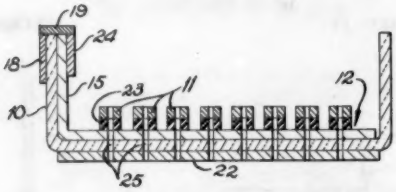
electrode and away from the bombarded surface of such phosphor layer so that the initial voltage of the charge image is of a more positive potential. This causes the initial charge image to be above the first crossover voltage even at such faster writing speeds which enables such charge image to be stored bistably by the charging action of the low velocity flood electrons. An intermediate layer of light transparent insulating material may be provided between the target electrode and the phosphor layer to increase the breakdown voltage of the dielectric and thereby enable such target electrode to be maintained at a higher positive voltage with respect to the collector electrode.

3,742,287

ELECTRON TUBE VOLTAGE CONTROL DEVICE

Richard Kaspar Orthuber, Sepulveda, and Hemmo Reint Alting-Mees, Granada Hills, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 28, 1971, Ser. No. 138,088
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 **11 Claims**



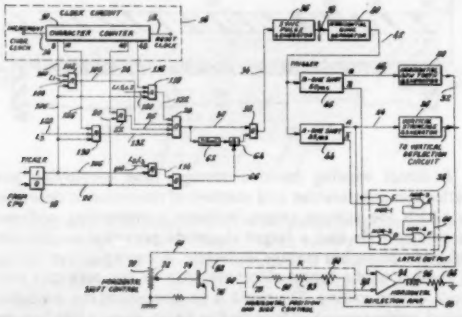
A sequential device for two perpendicular sets of conductive strips employed with a channel-type electron multiplier to allow only one hole through the multiplier to accept and emit electrons at a time. The device may utilize an electron gun for each set of strips to provide an electron beam to scan each set simply by use of a sawtooth deflection voltage. An effective raster-type scan of the multiplier may thus be accomplished. The device is an improvement because arrangements requiring counters or staircase generators are much more expensive.

3,742,288

RASTER CONTROL DEVICE FOR CONTROLLING THE POSITIONING OF THE RASTER AT THE BEGINNING OF EACH NEW LINE

Francis E. Albrecht, Bridgeport; William D. Baxter, Seymour, both of Conn.; John De Michiel, Mamaroneck, N.Y.; Robert J. Duggan, Monroe, Conn.; Carl Greenblum, Stamford, Conn.; Stephen A. Grosky, Monroe, Conn., and Arthur Langer, Stamford, Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sept. 8, 1971, Ser. No. 178,691
Int. Cl. H01j *29/70*
U.S. Cl. 315—18 **17 Claims**



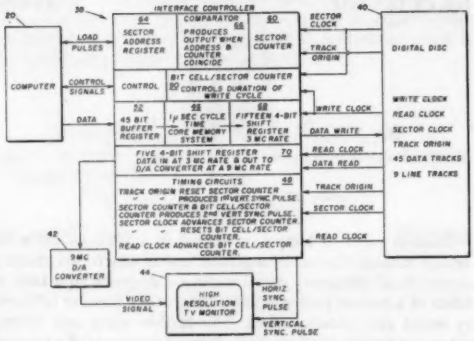
A circuit for controlling the raster of a cyclically scanned display device such as a cathode ray tube (CRT). The circuit may control both the horizontal and vertical positioning of the raster at the beginning of each new line of the display. The line positioning control responds to predetermined sync pulse patterns generated in response to detected raster position, data type, or other conditions. The raster may advance a predetermined number of full or partial line positions in response to a received sync pulse pattern, for example a single sync pulse, and may advance an additional like number of full or partial line positions in response to a variation in the received sync pattern, such as for example the receipt of additional sync pulses. The horizontal position at which each line of the display commences is controlled by a circuit which is operative in response to variations in the received sync pulse pattern for altering the line starting position.

3,742,289

VIDEO DISPLAY SYSTEM CREATING BOTH HORIZONTAL AND VERTICAL SYNC PULSES FROM THE DISC TIME TRACK

Gerard D. Koeijmans, Dallas, Tex., assignor to Mobil Oil Corporation, Dallas, Tex.

Continuation of Ser. No. 812,213, April 1, 1969, abandoned. This application Oct. 30, 1970, Ser. No. 85,761
Int. Cl. H01j *29/70*
U.S. Cl. 315—18 **5 Claims**



The video display system described consists of a digital disc which can store at least three seismic cross sections and a high resolution TV monitor. The monitor can show a cross section of 480 traces with 500 five-bit samples per trace. The electronic parts of the system control the flow of data to and from a computer through an interface controller. A high-speed D/A converter changes the digital seismic data into an analog video signal, and an external core memory is used to "bridge" the various speeds with which data flow from one point to another in the system. A graphical input device can be used to draw zones on the displayed cross section. This system can be an integral part of a complete computer graphics system.

3,742,290

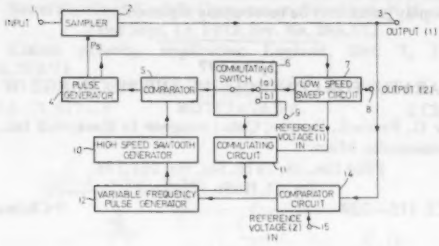
SAMPLING SYSTEM

Kozu Uchida, c/o Iwatsu Electric Co., LTD., 7-41, Kugayama 1-chome, Suginami-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 781,179, Dec. 4, 1968, abandoned. This application Feb. 11, 1971, Ser. No. 114,435
Int. Cl. H01j *29/70*
U.S. Cl. 315—25 **14 Claims**

A pulse generator included in a sampling system generates sampling pulses, whereby a waveform similar to the input

signal waveform is obtained at the output terminal of the sampling system. Synchronization of a sampling apparatus such as



a oscilloscope with a measuring signal without using additional synchronized signals can be assured.

3,742,291

COLOUR DISPLAY TUBES

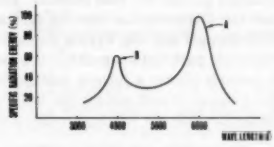
Isao Yamada, Ise, Japan, assignor to Ise Electronics Corporation, Mie Prefecture, Japan

Filed Aug. 3, 1971, Ser. No. 168,682

Claims priority, application Japan, Aug. 4, 1970, 45/67896; Aug. 4, 1970, 45/67897

Int. Cl. H01j *29/52*

U.S. Cl. 315—30 **6 Claims**



In a colour display tube of the type wherein a fluorescent screen is caused to luminesce by irradiating it with an electron beam, the flourescent screen is coated with at least one phosphor having at least two discrete spectral peaks of different excitation and photo-persistence characteristics and there is provided means for varying the interval during which the electron beam is permitted to impinge upon the fluorescent screen whereby to cause it to luminesce at the selected one of the spectral peaks.

3,742,292

ELECTRONIC TUBES SUCH AS TETRODES FOR VERY HIGH-FREQUENCY OPERATION

Pierre Gerlach, and Gerard Sire, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 30, 1971, Ser. No. 203,360

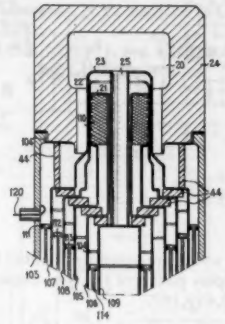
Claims priority, application France, Dec. 4, 1970, 7043740

Int. Cl. H01j *7/46, 19/80*

U.S. Cl. 315—39 **4 Claims**

Tetrode operating at very high frequencies according to a "-grounded cathode" mode.

All the coaxial cylindrical electrodes are extended outside the exhausted enclosure, with cylindrical conductive walls forming coaxial cavities which are tunable by means of ring pistons. Furthermore, the screen-grid is connected to a central conductive cylinder passing through the cathode and extending , as the electrodes do, with a cylindrical conductive wall



constituting with that one extending from the cathode a cavity which is tuned for ensuring a high frequency short-circuit between the cathode and the screen-grid.

3,742,293

HIGH FREQUENCY CIRCUITS FOR ELECTRON TUBES AND TUBES COMPRISING SUCH CIRCUITS

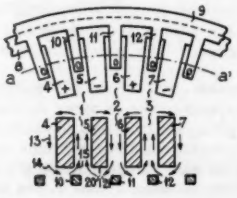
Paul Chavanat; Bernard Epsztein, and Georges Mourier, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 15, 1971, Ser. No. 208,157

Claims priority, application France, Dec. 22, 1970, 7046248

Int. Cl. H01j *25/50*

U.S. Cl. 315—39.51 **15 Claims**



High frequency circuits for the anodes of electron tubes, in particular magnetrons.

There is associated with the usual cavities of said anodes a second high frequency circuit arranged in parallel with the first one constituted by said cavities, to provide coupling between adjacent cavities and to maintain their π mode operation despite possible geometrical differences. Moreover, by making the second circuit an absorptive one, other unwanted modes are suppressed.

3,742,294

SUSTAINER VOLTAGE GENERATORS FOR DRIVING GASEOUS DISCHARGE DISPLAY PANELS

David S. Wojcik, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

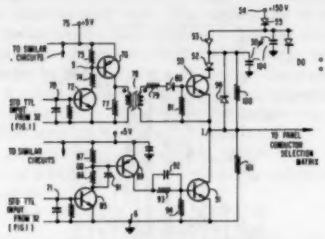
Filed Apr. 19, 1971, Ser. No. 135,022

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **5 Claims**

There is disclosed improved sustaining voltage generators for supply 50kHZ sustainer wave form to drive a gaseous

discharge display panel which are directly interfaceable with a low level logic system. Two embodiments of the invention are



disclosed both of which are uniquely oriented for driving gaseous discharge display panels of the type disclosed in Baker et al. U.S. Pat. No. 3,499,167.

3,742,295

LIGHTING SYSTEM IN COPYING APPARATUS

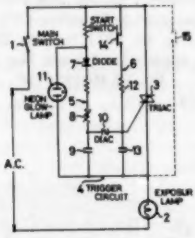
Yutaka Irie, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minamiku, Osaka, Japan

Filed Mar. 17, 1971, Ser. No. 125,033

Claims priority, application Japan, Mar. 30, 1970, 45/26745

Int. Cl. H05b *37/02*

U.S. Cl. 315—194 **5 Claims**



A lighting system comprises a triac included in the electric circuit of an exposure lamp in series therewith and a trigger circuit for triggering the triac into conduction at a small conduction angle simultaneously when a main switch is turned on and triggering the triac into conduction at a large conduction angle simultaneously when a start switch is turned on. The system protects the contacts and other switching elements of switches from possible damage to be caused when the exposure lamp is turned on and permits a short period of exposures.

3,742,296

CAPACITIVE-COUPLED CONNECTORS FOR GASEOUS DISCHARGE DISPLAY PANELS

George M. Krembs, Hyde Park, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Int. Cl. H05b *41/16*

U.S. Cl. 315—169 R **4 Claims**

A method and means for connecting the electrodes of a gaseous-discharge display panel to the drive circuits which control the potential across the electrodes and thus the production of the gaseous discharge. It is demonstrated that a capacitive coupling, rather than an ohmic coupling, is practical and beneficial from a maintenance standpoint, since the gas display panel may be more easily replaced.

3,742,297

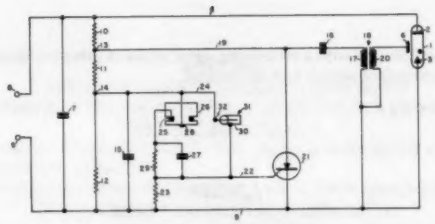
APPARATUS FOR CONTROLLING THE DISCHARGE OF A CAPACITOR

Roger G. Peacock, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 28, 1970, Ser. No. 101,778

Int. Cl. H05b *37/00*

U.S. Cl. 315—239 **9 Claims**



A flash tube triggering capacitor and triggering transformer primary winding are connected in series across power supply resistors to charge the capacitor. The anode-cathode circuit of an SCR is connected across the series combination of the capacitor and winding. A bypass capacitor, a bias resistor, and the terminals of a hot shoe are connected in series across one of the power supply resistors. The gate-cathode circuit of the SCR is connected across the bias resistor. The terminals of a PC connector are connected across the series combination of the hot shoe terminals and the bypass capacitor. The completion of an electrical path between either the hot shoe terminals or the PC terminals places a turnon voltage between the gate and cathode of the SCR and causes the latter to discharge the triggering capacitor into the winding to fire a flash tube.

3,742,298

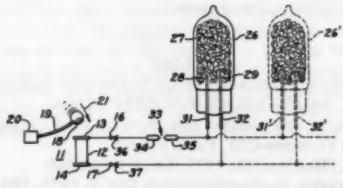
ARC GAP CIRCUITS FOR FLASHING HIGH-VOLTAGE PHOTOFLASH LAMPS

Paul T. Cote, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 24, 1971, Ser. No. 127,562

Int. Cl. H05b *37/00, 41/34;* **G03b** *15/04*

U.S. Cl. 315—323 **7 Claims**

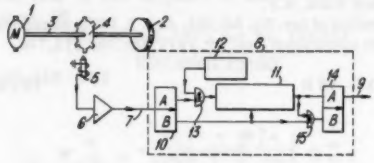


Circuit arrangements of arc gaps in series with high-voltage photoflash lamps, for improving reliability of flashing and for causing sequential flashing of individual lamps of an array of photoflash lamps by means of high-voltage firing pulses such as are produced by impacting a piezoelectric element in synchronism with the opening of a camera shutter.

3,742,299
SPEED DETECTOR

Alan Ernest Gane, Burgess Hill, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,572
Claims priority, application England, Oct. 7, 1971, 46,704/71
Int. Cl. H02p 7/00
U.S. Cl. 317—5 2 Claims



A device for producing a signal when, for example, a rotating body reaches a predetermined velocity. For example, a telegraphic printer will print with an unwanted orientation or in an undesired way if printing is permitted during start up of the mechanism. The device disclosed herein may thus be employed to inhibit printing until the mechanism gets up to speed.

3,742,300
SOLID END STATIC DISCHARGER

George M. Floyd, 514 Lansdowne Avenue, Camden, N.J.

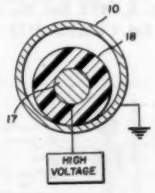
Filed Dec. 8, 1971, Ser. No. 206,047
Int. Cl. B64d 45/02; H05f 3/00
U.S. Cl. 317—2 E 3 Claims

A solid end static discharger for use with aircraft, the discharger employing a solid resistive rod having pre-determined electrically conductive characteristics and terminating outwardly in a machined end. An electrically conductive ionization bypass may be employed to over-fit portions of the solid rod to shunt extremely high electrical energies to protect against electrical overload.

3,742,301
CORONA GENERATOR

W. Alan Burris, 7 East Jefferson Circle, Pittsford, N.Y.

Filed May 11, 1972, Ser. No. 252,207
Int. Cl. H05b
U.S. Cl. 317—4 35 Claims

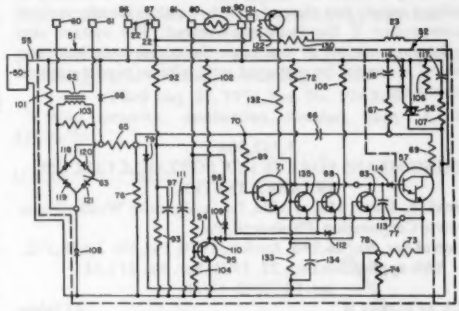


A corona generator is formed of simple, bendable or flexible tubing and includes a plastic dielectric for simplicity and economy. A long length of tubing is formed into a convenient coil, and the tubing is arranged in several combinations including electrodes, plastic dielectric, and a gap where a corona discharge is formed and through which a gas is passed.

3,742,302
MOTOR RELAY PROTECTION FOR REFRIGERANT COMPRESSOR MOTORS

Donald E. Neill, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,053
Int. Cl. H02h 3/08
U.S. Cl. 317—13 R 2 Claims

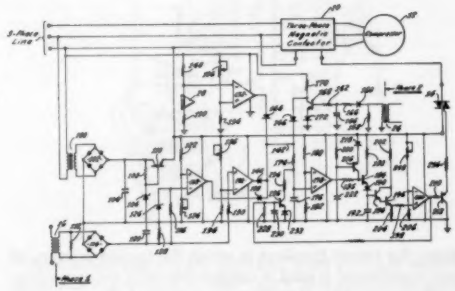


A refrigerant compressor motor is provided with a motor protection and control system providing various motor control functions in response to motor current, refrigeration system temperature, thermostat contact opening and closing and motor relay solenoid current. A resistor in series with the motor relay solenoid provides a voltage drop signal which is integrated to provide a control signal to a trip circuit which, in turn, deenergizes the motor relay in the event that the integrated relay current signal exceeds a predetermined trip threshold magnitude. If the solenoid current drops to a normal value after being initially energized, the integrator output remains below the trip threshold and the solenoid remains energized. In the event that the solenoid current fails to drop to a normal operating value after a period of time, the integrator output rises to a level which exceeds the trip level and deenergizes the solenoid. Additional time delay means is provided so that a period of time must elapse before the solenoid can be re-energized to permit it to cool.

3,742,303
COMPRESSOR PROTECTOR SYSTEM

Ernest C. Dageford, Irvine, Calif., assignor to BEC Products, Inc., Davenport, Iowa

Filed Nov. 8, 1971, Ser. No. 196,603
Int. Cl. H02h 7/08
U.S. Cl. 317—13 A 10 Claims



A compressor protector system for externally monitoring the internal temperature of a compressor motor by monitoring the level of the current supplied to the motor and for discon-

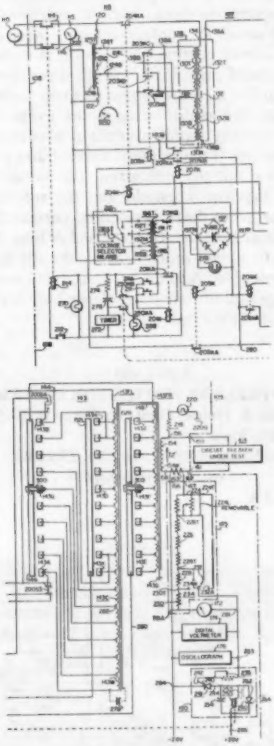
tinuing the supply of voltage to the motor when the current level is above or below a desired range of levels for a predetermined period of time. The compressor protector system may also directly monitor high temperature conditions within the compressor and a single phasing condition of the three-phase supply to the compressor motor so as to discontinue the supply of voltage under such high temperature or single phasing conditions. The compressor protector system automatically rechecks after a predetermined period of time to determine if the particular fault which resulted in a continuing of the voltage supply has cleared and then automatically restarts the compressor if the fault has cleared. The system also prevents short cycling in that once the compressor has been turned off it cannot be restarted until after a predetermined period of time.

3,742,304

TIMING MEANS FOR USE IN A PORTABLE CIRCUIT BREAKER TESTER

Frederick A. Elder, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 26,196, April 7, 1970, Pat. No. 3,678,372.
This application Dec. 22, 1971, Ser. No. 211,141
Int. Cl. H01h *47/18*
U.S. Cl. 317—141 R **2 Claims**



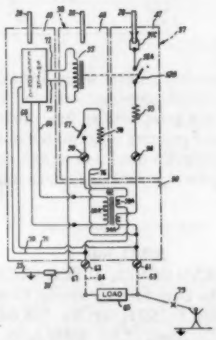
A tester for circuit breakers in which the tapped primary of a power transformer is used in conjunction with the secondary of a voltage boosting transformer controlled by a variable transformer to generate current in the circuit interrupter to be tested. The range of current is continuously variable from zero to approximately 50,000 amperes. A device for measuring the duration of the current in the circuit interrupter is provided and a means for measuring quick surges of current which immediately trip a faulty or overloaded circuit interrupter is provided to determine duration of breaker engagement and maximum current flowing before interruption.

3,742,305

ELECTRIC SHOCK PROTECTOR FOR USE WITH PANEL ASSEMBLY

Charles F. Hobson, Jr., Southington, and Herbert M. Dimond, Hartford, both of Conn., assignors to General Electric Company, New York, N.Y.

Continuation of Ser. No. 60,584, Aug. 3, 1970, abandoned.
This application Aug. 13, 1971, Ser. No. 171,770
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **19 Claims**



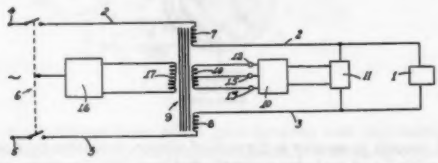
A unitary assembly comprising an insulating housing which includes an automatic electric circuit breaker, an electrically operated means for causing automatic opening of the circuit breaker in response to a given electric signal, highly sensitive ground-fault-detecting means for detecting a ground fault in a load circuit fed by the said circuit breaker and for generating an output signal in response thereto, and means for energizing said electrically operated means upon the occurrence of said output signal. The assembly has form and dimensions suiting it for mounting in a conventional panel assembly or load center of standard construction which may also contain conventional circuit protective devices. In a preferred form, the circuit breaker portion of the assembly comprises a prior art standard circuit breaker having a housing of prior art standard form and dimensions.

3,742,306

CORE BALANCE EARTH LEAKAGE PROTECTIVE SYSTEMS

Vivian Cohen, Johannesburg, and Sidney Charles Slocombe, Brakpan, both of South Africa, assignors to Fuchs Electrical Industries (Proprietary) Limited, Transvaal, South Africa

Filed Oct. 3, 1972, Ser. No. 294,564
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **10 Claims**



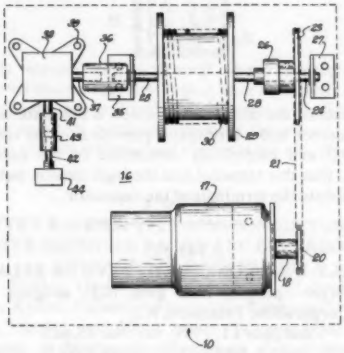
A core balance earth leakage protective system including a magnetic core; first and second sensing windings on the core; an electronic amplifier, the input to the amplifier being con-

nected to the first sensing winding on the core and the output from the amplifier being electro-magnetically coupled with the core; a polarized magnetic relay including an actuating coil which is connected to the second sensing winding on the core, the relay being operative to cause isolation of load windings associated with the core when the current through the relay coil exceeds a predetermined value.

3,742,307
BIN LEVEL INDICATOR

Thomas E. Patsch, Aurora, and Robert E. Farnham, Naperville, both of Ill., assignors to Barber-Greene Company, Aurora, Ill.

Filed Mar. 1, 1972, Ser. No. 230,754
Int. Cl. G01f *23/00*
U.S. Cl. 318—482 6 Claims

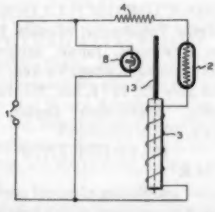


A reversible electric motor powers a drum through a drive train including a clutch. A weight is suspended from a length of cable, the latter being wound on the drum. The clutch is sensitive to the effect of the weight thereby to cause the drum to be rotated for unwinding the cable only when the weight is freely suspended. Indicator means including a potentiometer is responsive to rotation of the drum. A control circuit including timing means cyclically energizes the motor in up and down directions, the duration of time in the down direction of each cycle being greater than the duration of time in the up direction so as to cause the weight to be lowered a distance greater than the distance it is raised during each cycle of operation whereby the weight is in effect incrementally lowered to seek the level of material in the bin.

3,742,308
CURRENT CONTROL DEVICE

Shigeru Hayakawa, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Feb. 9, 1972, Ser. No. 224,800
Claims priority, application Japan, Mar. 15, 1971, 46/14483; Mar. 15, 1971, 46/14484
Int. Cl. H01h *47/24*
U.S. Cl. 317—125 16 Claims

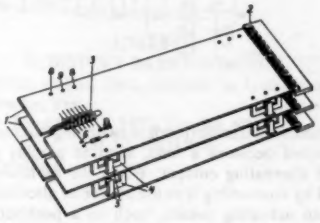


A current control device has a thermistor having an electric resistance which varies with a variation in the temperature, a heat-radiation means changable into and out of heat radiation relationship with the thermistor, and a controlling means coupled to the heat-radiation means. The control means is responsive to current flow through the thermistor for bringing the heat-radiation means into heat radiation relationship with the thermistor to control the temperature of the thermistor by negative feed-back upon variation of an electric resistance of the thermistor beyond a critical electrical resistance.

3,742,309
MOUNTING CLAMPS SUPPORTING STACKED PRINTED CIRCUIT BOARDS

Eric Sterner, Hagersten, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 25, 1971, Ser. No. 174,800
Claims priority, application Sweden, Sept. 4, 1970, 12030/70
Int. Cl. H05k *1/14*
U.S. Cl. 317—101 D 1 Claim

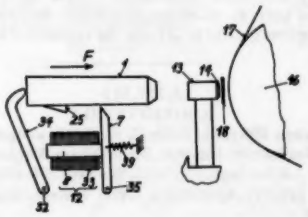


In an arrangement for assembling printed circuit cards with electronic components in mutually parallel positions each card is provided with two elements fixed along an edge of the cards. One of the elements is clamp formed and the other one consists of a spring clip, the central part of the clamp formed element is arranged to engage the spring clip element, whereby each card in a stack of cards can be displaced relatively to the other cards in the stack.

3,742,310
APPARATUS FOR MONITORING THE ACTION OF ELECTROMAGNETICALLY OPERATED PRINTING HAMMERS

Kurt Ehrat, Zurich, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 6, 1971, Ser. No. 131,637
Claims priority, application Switzerland, Apr. 7, 1970, 5122/70
Int. Cl. H01h *47/00*
U.S. Cl. 317—123 5 Claims

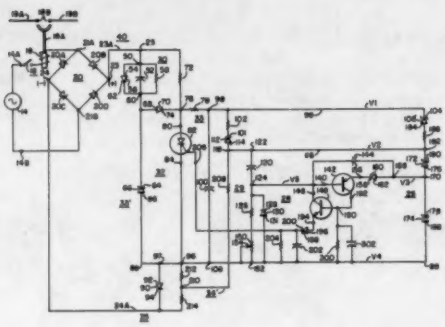


An electromagnetically operated print hammer monitoring apparatus is provided in which each hammer has an actuating element to trip an armature associated with the hammer to induce a voltage pulse in the coil of the electromagnet. The actuating element being arranged to trip the armature just as the hammer is about to print a character.

3,742,311
STATIC ON-DELAY CIRCUIT WITH IMPROVED HOLDING MEANS

Wardell Gary, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 16, 1971, Ser. No. 153,504
Int. Cl. H01h *47/18, 47/32;* **H03k** *17/60*
U.S. Cl. 317—141 S **5 Claims**



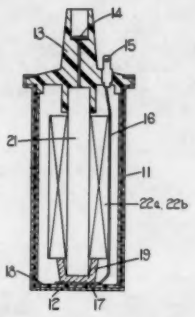
A two-terminal transformerless switching circuit adapted to be connected between a load, such as a relay coil, and a source of alternating current. When the switching circuit is energized by connecting it to the source of alternating current through an actuating means, such as a pushbutton switch, energization of the load is delayed by a timing and triggering circuit, the output of which is connected to the gate of a silicon controlled rectifier. The silicon controlled rectifier is connected across the output terminals of a full wave bridge rectifier in such a manner that when it is energized, alternating current will flow into the bridge and through the coil of the relay in sufficient magnitude to energize the relay and complete the switching operation. The complete switching action is delayed for a period of time determined by the charging of a capacitor through a variable resistor network. In addition, a diode array is connected in parallel with an energy storage capacitor 52 so that the capacitor charges to a voltage generally equal to the maximum possible voltage drop across a conducting diode array. When the full wave rectified pulses of current which are applied to the silicon controlled rectifier approach zero the diode array is reverse biased and the capacitor discharges through the then marginally conducting silicon controlled rectifier to sustain conduction in it until sufficient energy from the next half wave of current flows through the silicon controlled rectifier or thyristor. Both the timing and triggering circuits and the holding circuit are initially empowered from the output terminals of the full wave bridge rectifier upon actuation of the timing cycle by closing the previously mentioned pushbutton switch, for example. The amount of current necessary to initially empower these circuits being insufficient to actuate the connected load coil.

3,742,312
IGNITION COILS

Peter Thomas Hillyard, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 15, 1972, Ser. No. 289,274
Claims priority, application Great Britain, Sept. 15, 1971, 42,905/71
Int. Cl. H01f *27/00*
U.S. Cl. 317—157.62 **3 Claims**

An ignition coil having a hollow casing closed at one end by an insulating cap which carries the high tension output terminal of the coil. The conductive core is housed within the casing and electrically connected to the core is one end of the secondary winding of the coil which encircles the core, the core being also electrically connected to the high tension output terminal. A primary winding also encircles the core and a conductive member is spaced from the core by the insulating support member. This conductive member defines with the

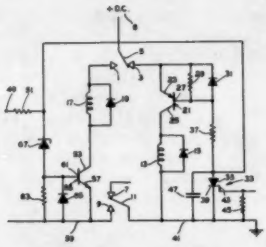


core a capacitor the dielectric of which is the material of the support member and a terminal is provided on the cap of the ignition coil and electrically connected to the conductive member so that this terminal and the high tension output terminal constitute the terminals of the capacitor.

3,742,313
SINGLE-WIRE CONTROL OF RCCB OR RELAY

William Meyer Spencer, West End, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed June 11, 1970, Ser. No. 45,463
Int. Cl. H01h *47/00;* **H02h** *1/00*
U.S. Cl. 317—155.5 **1 Claim**



A circuit having single-wire control for operating a remote controlled circuit breaker with trip and reset coils, comprising switching means arranged to connect the trip or reset coil to a power source in response to a trip or reset signal applied to the single-wire control to energize the trip or reset coil for operating the circuit breaker accordingly.

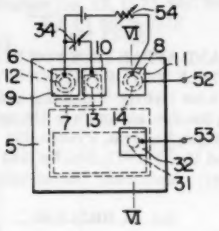
3,742,314
SEMICONDUCTOR OSCILLATING ELEMENT

Masaya Yabe; Teizo Takahama; Masaru Kono, and Katsumi Hirono, all of Kawasaki, Japan, assignors to Fiyi Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed July 22, 1971, Ser. No. 165,185
Claims priority, application Japan, July 24, 1970, 45/64883; Apr. 16, 1971, 45/24368
Int. Cl. H01l *11/10*
U.S. Cl. 317—234 R **5 Claims**

A semiconductor oscillating element comprising a semiconductor wafer which is provided with a first region of a conductivity type, a second region of a reverse conductivity type, a pn junction formed between said two regions, an injection elec-

trode means provided on said first region at a specific distance from said second region, a first ohmic contact-electrode means provided on said first region at specific distances, respectively, from said second region and from said injection



electrode means, and a second ohmic contact-electrode means provided on said first region so as to be near said injection electrode means. Furthermore, various modifications of the semiconductor oscillating element mentioned above and operation circuits utilizing said elements are also disclosed.

3,742,315

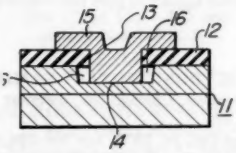
SCHOTTKY BARRIER TYPE SEMICONDUCTOR DEVICE WITH IMPROVED BACKWARD BREAKDOWN VOLTAGE CHARACTERISTIC

Mutsuo Iizuka, Osaka; Shohei Fujiwara, Takatsuki; Gota Kano, Kyoto; Hiromasa Hasegawa, Takatsuki; Iwao Teramoto, Ibaragi, and Hitoo Iwasa, Takatsuki, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Division of Ser. No. 861,670, Sept. 29, 1969. This application Oct. 18, 1971, Ser. No. 189,931

Int. Cl. H01l *5/02, 7/50, 7/60*

U.S. Cl. 317—234 R **2 Claims**



A semiconductor device having a Schottky barrier junction formed in the bottom of a polygonal recess on a surface of a semiconductor substrate comprises an undercut in the recess beneath an insulating mask formed on the substrate, and a metal passing through the mask and extending to the bottom of the recess for forming said junction. The undercut provides an enclosed spacing encircling the junction portion of said metal and said semiconductor, thereby improving the backward breakdown voltage characteristic therein.

3,742,316

WIDE TEMPERATURE RANGE ELECTRONIC DEVICE WITH LEAD ATTACHMENT

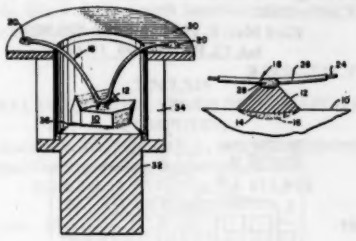
Richard Farrell, Lowell, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Division of Ser. No. 868,775, Oct. 23, 1969, Pat. No. 3,665,589. This application Jan. 28, 1972, Ser. No. 221,833

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **2 Claims**

A electronic device including lead attachment structure which permits operation of the devices over a wide temperature range. The device comprises a core conductor having a thin coating of metal thereon whereby only a limited amount of coating material is available to form an alloy which bonds the core conductor to the device electrode, the electrode



composition thus being affected only in the region adjacent the lead and the bond between the electrode and device being unaffected.

3,742,317

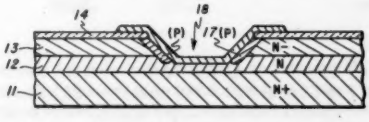
SCHOTTKY BARRIER DIODE

Tzu Fann Shao, Dallas, Tex., assignor to Instruments Incorporated, Dallas, Tex.

Filed Sept. 2, 1970, Ser. No. 69,062

Int. Cl. H01l *9/00*

U.S. Cl. 317—235 R **4 Claims**



Anisotropic etching is employed in the fabrication of a Schottky barrier diode to provide a recessed geometry having a guard ring of reduced area, thereby avoiding the objectionable degree of parasitic capacitance found in related planar devices. A low series resistance is also provided since the anisotropic etching step inherently permits a precise control of the distance between the surface barrier and a buried substrate layer of low resistivity.

3,742,318

FIELD-EFFECT SEMICONDUCTOR DEVICE

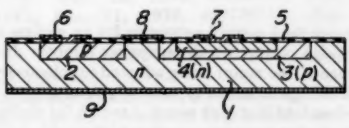
Akio Yamashita, Ikeda-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 24, 1971, Ser. No. 201,660

Claims priority, application Japan, Nov. 26, 1970, 45/104285; Nov. 30, 1970, 45/106523

Int. Cl. H01l *9/12*

U.S. Cl. 317—235 R **3 Claims**

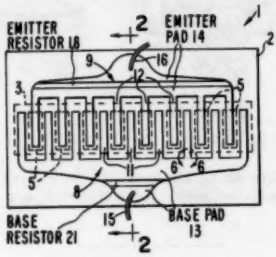


A field-effect semiconductor device having negative resistance characteristics which are controllable by means of an electric field. The device may serve as a solid-state switch.

3,742,319
R. F. POWER TRANSISTOR

William S. Bryan, and Joseph H. Johnson, both of Santa Clara, Calif., assignors to Communications Transistor Corporation, San Carlos, Calif.

Filed Mar. 8, 1971, Ser. No. 121,907
Int. Cl. H01l 11/06, 19/00
U.S. Cl. 317—235 R 4 Claims



A semiconductive substrate member has deposited thereon, collector, emitter, and base electrode structures connected to respective collector, emitter and base subregions of the semiconductive substrate member to form a radio frequency power transistor. The base electrode structure has a resistor incorporated therein, as by depositing a thin film resistor across a gap in the electrode structure, for increasing the electrical stability and electrical ruggedness of the power transistor.

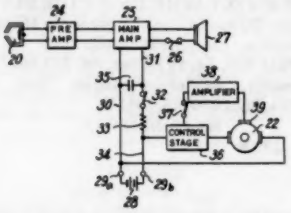
ERRATA

For Classes 317—230 and 318—227 see: Patents Nos. 3,742,369 and 3,742,370

3,742,320
TAPE FAST FEED CONTROL APPARATUS FOR ENDLESS MAGNETIC TAPE CARTRIDGE PLAYER

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo, Japan

Filed May 10, 1971, Ser. No. 141,621
Claims priority, application Japan, May 11, 1970, 45/39292
Int. Cl. B65h 59/38
U.S. Cl. 318—6 8 Claims

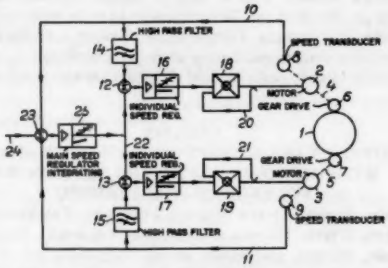


A tape fast feed control apparatus for an endless magnetic tape cartridge player, which comprises a motor driven tape feeding means, the motor being adapted to selectively control its rotational speed so as to normally feed the tape at low speed or fast feed it at high speed, a switch for changing rotation of the motor from low speed to high speed, and a changing means for change-over operation of the switch, the changing means being arranged to normally maintain the switch in a first position where the motor is rotated at low speed, the changing means including an operating member and adapted to change over the switch to a second position where the motor is rotated at high speed in response to manual operation of the operating member, the changing means being further adapted to change over the switch from the second position to the first position after the period proportional to a number of operations of the operating member, whereby the tape is fast fed by the period as designated by a number of operations of the operating member.

3,742,321
METHOD AND APPARATUS FOR STABILIZING MULTIPLE MOTOR DRIVEN SYSTEMS

Kjell Bergman; Arne Dybvig; Per Kain, and Frede Sorensen, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 7, 1971, Ser. No. 141,176
Claims priority, application Surtzerland, July 8, 1970, 9484/70
Int. Cl. H02p 5/46
U.S. Cl. 318—99 4 Claims

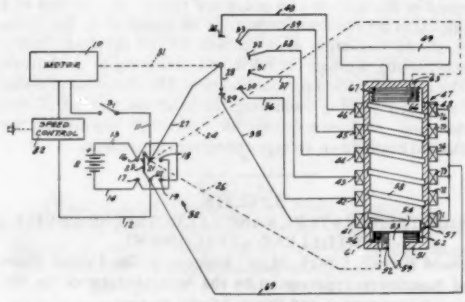


For stabilizing the operation of the motors in a system having a machine such as a rotary kiln driven by two motors, and where speed fluctuations of different frequencies may occur in the system, the motors are controlled through a single control member when the fluctuations are below a certain frequency whereas for fluctuation above that frequency a high pass filter permits the control signals to pass individually to the two motors.

3,742,322
ELECTRONIC ROTARY HAMMER

Dennis M. Michaelson, Chicago, Ill., assignor to Pan-Technic, Inc., Chicago, Ill.

Filed Oct. 20, 1971, Ser. No. 190,930
Int. Cl. H02k 33/00
U.S. Cl. 318—122 4 Claims

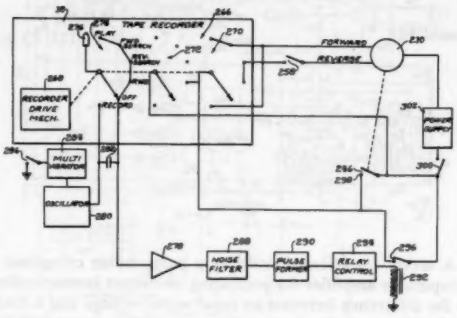


An electronic rotary hammer which utilizes a moving magnetic field to energize a rotary hammer having a cylindrical member formed with an internal groove in which a hammer member is supported so as to move longitudinally of the hammer in response to variations of the magnetic field. The hammer rotates as well as being moved upwardly and downwardly by a distributor which controls the application of a magnetic field so as to drive the hammer member.

3,742,323
FILMSTRIP PROJECTOR WITH SYNCHRONIZED SOUND

Frank C. Badalich, Chicago, and Roy H. Watterlohn, Morton Grove, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 97,859, Dec. 14, 1970, Pat. No. 3,675,994. This application Jan. 13, 1972, Ser. No. 221,462
Int. Cl. H02p *3/18*
U.S. Cl. 318—467 **1 Claim**



A filmstrip projector provided with synchronized audio accompaniment. The filmstrip is framed with respect to a projection aperture by a manually operable framing means. Once framed, the filmstrip is advanced frame-by-frame by a motor driven film advance mechanism. The audio accompaniment is carried on a dual track audio tape one track of which carries the audio accompaniment. The remaining track carries control signals which serve to actuate the film advance mechanism to maintain synchronization between the audio track and the filmstrip.

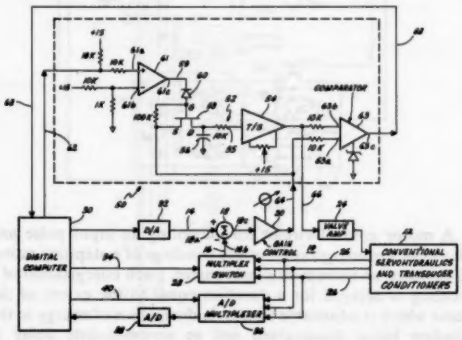
ERRATUM

For Class 318—482 see:
Patent No. 3,742,307

3,742,324
CONTROL MODE SWITCHING SYSTEM FOR A SERVOMECHANISM

Alan E. Gross, Minnetonka; Rodney L. Larson, St. Louis Park, and Ralph E. Skoe, Minnetonka, all of Minn., assignors to MTS Systems Corporation, Minneapolis, Minn.

Filed July 14, 1971, Ser. No. 162,561
Int. Cl. G05b *7/00*
U.S. Cl. 318—591 **13 Claims**

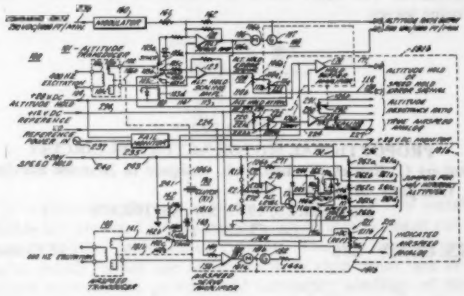


A track and store amplifier maintains a constant direct current error voltage to the servomechanism while transferring from one mode of control to another. A comparator supplies a logical 1 or 0 to a digital computer to generate a positive or negative command slew in predetermined increments to force the new direct current voltage to a value such that it equals the direct current error voltage that has been stored prior to the transfer. In this way, a smooth transition from one mode of control to another is realized.

3,742,325
PLURAL INPUT MODE SERVO DRIVEN AIR DATA COMPUTER

John H. Andresen, Jr., Hewitt, N.J., assignor to Intercontinental Dynamics Corporation, Englewood, N.J.

Filed Feb. 2, 1971, Ser. No. 111,955
Int. Cl. G05b *7/00*
U.S. Cl. 318—591 **10 Claims**



A device for indefinitely holding and storing the value of any one of a plurality of function inputs at a given instant for generating a hold output representative of the deviation, magnitude and direction from the stored hold signal, which condition is continuously monitored for any time interval desired by the operator.

The system is especially adapted for use with an air data computer wherein it is desired to generate a hold signal from any one of a plurality of function inputs which normally may be comprised of altitude, altitude rate, airspeed and Mach. Any one of the function inputs may be selected by generation of an appropriate signal to couple one of the plurality of function inputs to a digital or electromechanical servo unit which functions to "remember" the function input applied thereto at the time the hold signal is desired and which continuously monitors and compares the selected function input against the stored value to develop a hold signal representative of any deviation therebetween.

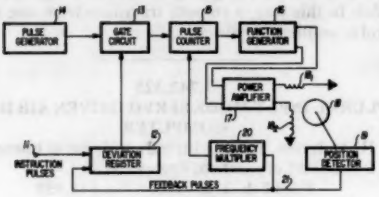
3,742,326
DIGITAL SERVO-MECHANISM

Nobuo Ikuda, and Masahiko Sekiguchi, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Japan

Filed Sept. 16, 1971, Ser. No. 181,172
Claims priority, application Japan, Sept. 16, 1970, 45/80458; Sept. 16, 1970, 45/80459; Oct. 21, 1970, 45/91972; Dec. 11, 1970, 45/109713; Dec. 11, 1970, 45/109715
Int. Cl. G05b *19/28*
U.S. Cl. 318—603 **7 Claims**

A digital servo-mechanism for controlling a frequency controlled two-phase servo-motor is provided. Instruction pulses for moving the servo-motor, by rotating the same through an angle proportional to the number of the instruction pulses, are fed to the servo-mechanism. A position angle detector, such as a synchro-resolver, detects the rotation angle of the servo-motor and produces feedback pulses proportional to the

rotated angle of the servo-motor. Any deviation between the instruction pulses and the feedback pulses is converted into



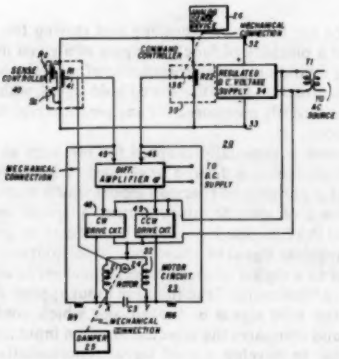
sine and cosine waves whose frequency is proportional to the deviation. The servo-motor is controlled by the sine and cosine waves.

3,742,327

PROPORTIONAL MOTOR ACTUATOR CIRCUIT

Robert G. Nettles, Goshen, Ind., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 15, 1971, Ser. No. 106,650
Int. Cl. G05f 1/00
U.S. Cl. 318—678 **15 Claims**



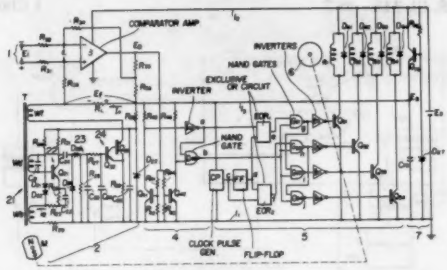
A motor actuator circuit for use in heating and air conditioning and process control systems to selectively rotate a motor shaft which positions a damper or valve. A command signal, such as a voltage, or a potentiometer controlled by a sensing element of the system provides a signal representing the desired position for the damper and a sense potentiometer provides a signal representing the actual shaft position; a signal comparator circuit including a differential amplifier having an output switching stage is responsive to a potential difference between the signals to effect energization of one of a pair of motor windings, the energized one of the pair being determined by the polarity of the difference signal; and detent circuits derive a detent signal from the voltage across the other one of the motor windings for coupling to the amplifier input to increase the potential difference, the sense potentiometer wiper being linked to the motor shaft so that the potential difference decreases as the shaft rotates to the desired position, and the motor is deenergized when the desired position is reached.

3,742,328

CLOSED LOOP STEPPING MOTOR SERVO-MECHANISM

Susumu Ohta, Tokyo, Japan, assignor to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Apr. 28, 1971, Ser. No. 138,189
Claims priority, application Japan, Apr. 30, 1970, 45/37330
Int. Cl. G05b 19/40
U.S. Cl. 318—685 **3 Claims**



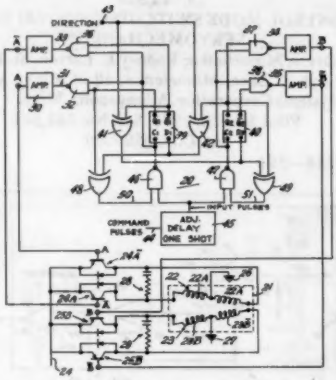
A servo - mechanism utilizing a pulse motor comprises a comparator amplifier for producing an output corresponding to the difference between an input signal voltage and a feedback voltage, a signal conversion circuit for converting the output from the comparator amplifier into two bit level signals, and a pulse motor driving circuit for controlling the direction of the pulse motor in accordance with one of the two bit level signals and for controlling the start and stop of the pulse motor in accordance with the other of the two bit level signals.

3,742,329

STEPPING MOTOR CONTROL INCLUDING PULSE RESPONSIVE MEANS TO DEENERGIZE PRESENTLY ENERGIZED WINDINGS WHILE DELAYING ENERGIZATION OF WINDINGS TO BE ENERGIZED

Irving Jules Giguere, Bristol, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Sept. 29, 1971, Ser. No. 184,730
Int. Cl. H02k 37/00
U.S. Cl. 318—696 **9 Claims**



A motor control circuit for accepting an input pulse and changing the energization of the windings of a stepping motor to produce an incremental movement. Each energization of a winding is delayed for a duration equal to the extent of the pulse which is adjustable to enable dissipation of energy in the winding being deenergized and to accommodate delay in semiconductor turn on and turn off times. The circuit includes gates and a pair of bistable means for directing the proper sequence of winding changes of energization.

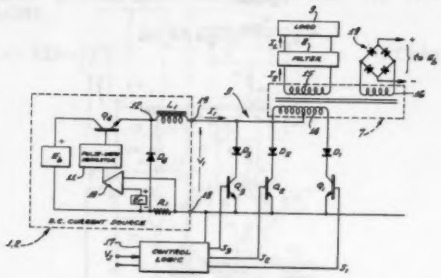
ERRATUM

For Class 321—2 see:
Patent No. 3,742,371

3,742,330
CURRENT-MODE D. C. TO A. C. CONVERTERS

Leonard O. Hodges, Costa Mesa, and Larry R. Suelzle, Los Altos, both of Calif., assignors to Delta Electronic Control Corporation, Costa Mesa, Calif.

Filed Sept. 7, 1971, Ser. No. 178,112
Int. Cl. H02m ; G05f
U.S. Cl. 321—9 A 12 Claims



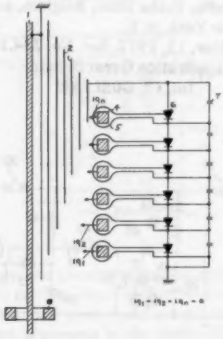
Circuitry for controlling a load current, without feedback, comprises:

a. a source of substantially constant current I_1,
b. power switching circuitry connected to receive I_1 and to produce an output current a version of which is to be supplied to a load, and
c. control means connected to control the power switching circuitry so as to cause the output current to switch between predetermined positive and negative values, and a value intermediate thereto.

3,742,331
INDUCTIVE TYPE FIRING ARRANGEMENT FOR SERIES CONNECTED THYRISTORS IN A HIGH VOLTAGE RECTIFIER

Hans Jurg Bossi, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland

Continuation of Ser. No. 24,614, April 1, 1970, abandoned.
This application Jan. 18, 1972, Ser. No. 218,845
Claims priority, application Switzerland, Apr. 23, 1969, 6119/69
Int. Cl. H02m *1/08*
U.S. Cl. 321—11 4 Claims

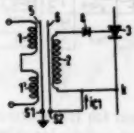


A control column for inductive ignition of a plurality of series-connected thyristors of a high-voltage converter comprises a primary conductor at the center of a condenser bushing which is surrounded by ring-shaped iron cores connected respectively to different metallic plates included in the bushing. The cores have control windings connected respectively to the control electrodes of the thyristors and the voltage distribution on the converter is made essentially equal to the voltage distribution on the control column to prevent flow of stray displacement currents over the cores.

3,742,332
PULSE TRANSFORMER FOR DRIVING THYRISTORS

Christian Koblick; Ernst Muller, both of Munich, and Klaus Rambold, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 1, 1972, Ser. No. 230,621
Claims priority, application Germany, Mar. 4, 1971, P 21 10 276.1
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 12 Claims

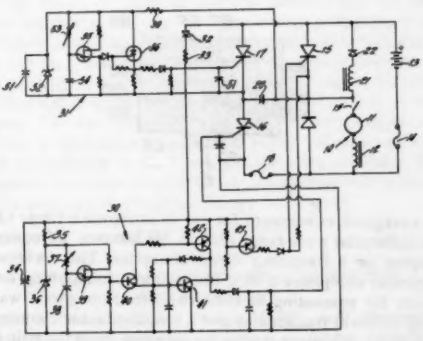


In a pulse transformer used to drive thyristors two metal shields are provided to reduce undesirable displacement currents and other interference currents. The two overlapping metal shields, which are separated from each other, are arranged between the primary and secondary windings of the pulse transformer. One shield is connected with the cathode of the driven thyristor and the other is connected with chassis ground or the primary potential of the pulse transformer.

3,742,333
D-C VOLTAGE CONTROL WITH ADJUSTABLE PULSE WIDTH AND REPETITION RATE

John J. Yurick, Fountain Valley, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed May 13, 1971, Ser. No. 143,111
Int. Cl. H02m *3/32*
U.S. Cl. 321—45 C 2 Claims

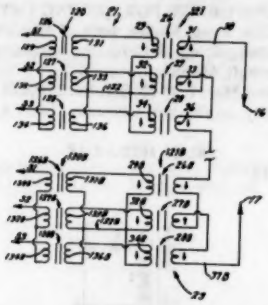


A d-c voltage control circuit provides a controlled rectifier in series with a motor and battery and provides gating pulses to fire the controlled rectifier at an adjustable pulse repetition rate. A turn-off circuit for turning off the controlled rectifier is adjustable independently of the pulse repetition rate adjustment to adjust the length of time the controlled rectifier conducts after firing.

3,742,334
LOW INDUCTANCE UNIT PARTICULARLY FOR ELECTRIC WELDERS

Chester F. Leathers, 9326 E. Shore Drive, Portage, Mich.

Continuation-in-part of Ser. No. 25,055, April 2, 1970, abandoned. This application July 2, 1971, Ser. No. 159,274
Int. Cl. H02m 5/14
U.S. Cl. 321—57 3 Claims

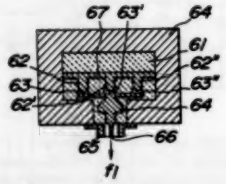


An electric transformer for transforming three-phase power from a three-phase power source into single-phase power. The transformer has a plurality of elongated and parallel shell-type transformer cores with each of the cores having a primary winding and a secondary winding associated therewith. The primary windings have input terminals terminating at one end of the plurality of elongated and parallel shell-type cores. The secondary windings comprise at least one turn associated with each of the shell-type cores with one turn associated with one of the cores being opposite in polarity to the other turns. The opposite ends of the secondary windings terminate at opposite longitudinal ends of the cores.

3,742,335
WAVEGUIDE COMPONENT COMPRISING NON-LINEAR ELEMENTS

Yoshihiro Konishi, Sagamihara, Japan, assignor to Nippon Hoso Kyokai, Tokyo, Japan

Filed Apr. 7, 1972, Ser. No. 242,167
Claims priority, application Japan, Apr. 28, 1971, 46/28334
Int. Cl. H02m 5/20; H03h 7/02
U.S. Cl. 321—69 W 6 Claims

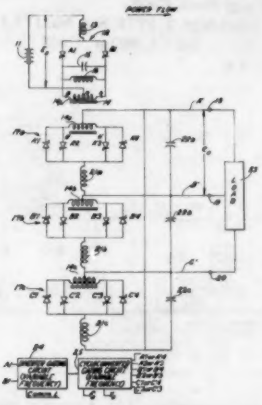


A waveguide component for use in microwave range or in quasi-millimeter wave range such as, for instance, a frequency multiplier or a frequency down converter. The waveguide component comprises a strip line element functioning as an antenna for resonating at least two electromagnetic waves having different frequencies and a semiconductor element of which one end is connected to the strip line. Both the strip line and the semiconductor element are provided onto a dielectric base plate by means of printing circuit technique. The dielectric base plate is mounted in a waveguide in a manner that the strip line element extends parallel to a high frequency electric field in the waveguide. The waveguide component having above construction is able to be miniaturized by the elimination of the conventional tuning circuit elements and due to its improved semiconductor mounting it is suitable to be used in quasi-millimeter wave range.

3,742,336
VERSATILE CYCLOINVERTER POWER CONVERTER CIRCUITS

Burnice D. Bedford, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,673
Int. Cl. H02m 5/30
U.S. Cl. 321—69 R 26 Claims

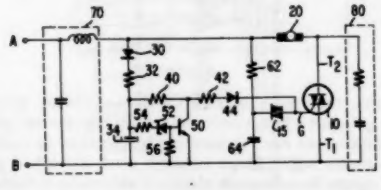


A family of high-frequency-link solid state power converters having an input and output switching circuit that function as a high frequency parallel capacitor commutated control inverter and a cycloconverter output circuit to supply variable frequency and variable voltage power to a load. The tuned commutation circuit for the inverter switches, preferably thyristors, includes commutating inductance in parallel with the commutation capacitor. By operating the inverter at a variable frequency greater than the resonant frequency, the commutating energy or commutating angle changes as a function of the load. The cycloconverter switches are phase controlled with respect to the high frequency inverter voltages. Depending on the circuit configuration, a-c or d-c supply voltage is converted to polyphase a-c, single phase a-c, or d-c output voltage, and power flow in either direction can be obtained. An application is a variable speed a-c motor drive.

3,742,337
PROTECTIVE SWITCHING CIRCUIT FOR PROVIDING POWER TO A LOAD FROM AN ALTERNATING CURRENT SOURCE HAVING PEAK-TO-PEAK EXCURSIONS WITHIN OR ABOVE A GIVEN RANGE

Henri Joseph Digneffe, Fexhe Slins, Belgium, assignor to RCA Corporation, New York, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,188
Claims priority, application Great Britain,
Int. Cl. G05f 5/00
U.S. Cl. 323—19 14 Claims



First and second triggering circuits are provided within a switching circuit for supplying triggering signals to the gate of a thyristor as a function of an applied AC source. When the

source exceeds a given predetermined magnitude, disabling means are effectuated which prevents a given one of the triggeing circuits from supplying a triggering signal. The switching circuit is designed so that the RMS voltage applied to a load is automatically regulated, independent of the magnitude of the applied AC source.

3,742,338

DC VOLTAGE REGULATOR CIRCUIT

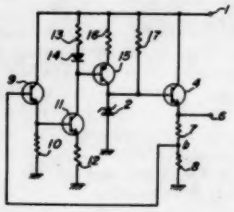
Hitoshi Sugano, and Akio Tanaka, both of Takatsuki, Japan, assignors to Matsushito Electronics Corporation, Osaka, Japan

Filed Mar. 8, 1972, Ser. No. 232,792

Claims priority, application Japan, Mar. 15, 1971, 46/14481

Int. Cl. G05f 1/56

U.S. Cl. 323—22 T **5 Claims**



A circuit in which the voltage derived from a reference diode or silicon zener diode is fed back through an emitter-follower circuit to the base of a transistor and the constant current flowing through the emitter-collector circuit of the transistor is in turn applied to the reference diode so that such a stabilized output voltage as cannot be attained by the zener diode alone may be obtained.

3,742,339

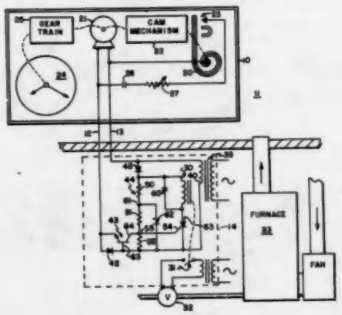
POWER SUPPLY AND PHASE RESPONSIVE APPARATUS

Balthasar H. Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 856,062, Sept. 8, 1969, Pat. No. 3,599,868. This application Nov. 9, 1970, Ser. No. 88,093

Int. Cl. G05f 5/00

U.S. Cl. 323—119 **8 Claims**



A power supply and phase responsive apparatus connected by two wires to a remote electric clock thermostat for supplying power to the clock motor and connecting a temperature responsive switch apparatus in the thermostat over the same two wires to a relay associated with the phase responsive apparatus for controlling temperature conditioning apparatus furnishing heated air from a furnace to the space containing the clock thermostat. The phase responsive apparatus responding to the phase of the voltage and current supplied to the clock thermostat whereby normally with only the clock operating, the current lags the voltage, but upon the temperature responsive switch apparatus closing an additional capacitive circuit, the current is either in phase or leads the voltage to result in the energization of the relay and thus the conditioning apparatus.

3,742,340

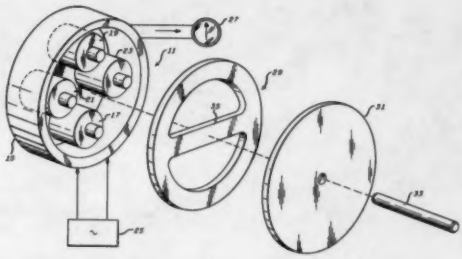
INDUCTIVE ANGLE POSITION TRANSDUCER

James A. Kiedrowski, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 25, 1972, Ser. No. 229,365

Int. Cl. G01r 33/00

U.S. Cl. 323—51 **12 Claims**



An angular position transducer wherein the stator comprises a generally cup-shaped housing of high permeability material the bottom thereof supporting diametrically opposed primary and secondary pole pieces and windings and the side walls thereof constituting a portion of the return path for magnetic flux; the rotor comprises a windingless shorted turn member including a ring or annulus of electrically conductive, non-magnetic material with a diametric shorting portion and adapted to overlie the open ends of the side walls of the housing. The radial spacing of the primary and secondary pole pieces is less than the internal radius of the rotor ring and the diametric shorting portion of the rotor at its null position symmetrically overlies the secondary overlying pole pieces. The magnetic flux return path is provided as an integral part of the rotor and comprises a further ring or annulus of high permeability material concentric with the conductive non-magnetic ring but having an internal diameter substantially less than that of the conductive ring so that it overlies both primary and secondary pole pieces. Alternatively, the rotor flux return path can be a complete disk. This configuration provides an axial running clearance only and thereby eliminates the precision machining normally required with stationary iron-to-iron air gaps. The construction is such that the output signal null position is insensitive to axial and radial translations sometimes unavoidable in the bearings supporting the rotor. The transducer is simple in construction and economical to manufacture using conventional fabrication techniques.

3,742,341

INDUCTIVELY COUPLED METAL DETECTOR ARRANGEMENT

Garth A. Clowes, Palos Verdes, Calif., and Masamitsu Nagaoka, Tokyo, Japan, assignors to Entex Industries, Inc., Carson, Calif.

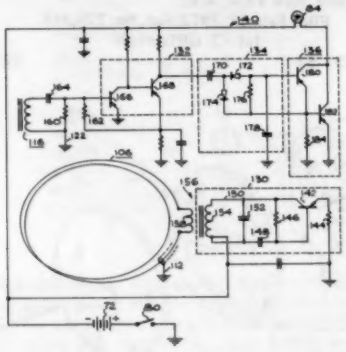
Filed Aug. 16, 1971, Ser. No. 172,200

Int. Cl. G01v 3/10

U.S. Cl. 324—3 **11 Claims**

A metal detector arrangement for detecting the presence of a metal object in proximity thereto. A case means is provided in which there is a cavity. An electrically operated detector circuit is positioned within the cavity and the detector circuit

generally comprises a search coil connected to an oscillator. The oscillator has a tank circuit and the inductor of the tank circuit is connected to the primary of the transformer. The search coil is connected to the secondary of the transformer. The oscillator generates an output at a preset frequency. When a metal object is in proximity to the metal detector the impedance to the signal radiated by the search coil is changed thereby changing the inductance of the tank circuit. The change in inductance of the tank circuit in the presence of a metal object raises the frequency of the oscillator output signal. A receiver coil is positioned within the search coil and receives the radiated signal from the search coil. The receiver



coil is connected to an amplifier and the response of the amplifier is such that the increase in frequency of the radiated oscillator output signal changes the magnitude of the amplifier output signal. An indicator, such as a light bulb, is coupled to the amplifier through a switch means and the light bulb changes in intensity in proportion to the change in the magnitude of the amplifier output signal. The switch means turns off the indicator for the amplifier output having a preselected magnitude. A sensitivity control means is also provided to increase the magnitude of the amplifier output signal for the condition of the presence of a given mass of metal at a given distance from the detector and, thus, provide a variable sensitivity to aid in the detection of very small metal objects.

3,742,342

MEASURING TRANSDUCER WITH COMBINED POWER INPUT AND SIGNAL OUTPUT LINES

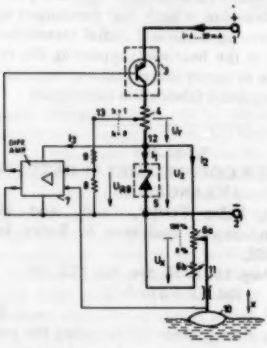
Gunter Schick, Tillystrasse 9,495, Minden/Westf., Germany

Filed Oct. 12, 1970, Ser. No. 79,810

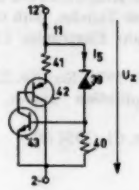
Claims priority, application Germany, Oct. 13, 1969, P 19 51 523.2

Int. Cl. G01f *23/10, 23/18*

U.S. Cl. 323—4 **10 Claims**



A measuring transducer for converting a quantity to be measured into an electrical signal, the transducer having but two lead-in wires for providing voltage and current to the transducer as power supply therein, and wherein the measured quantity is represented by an electrical signal that passes through resistance such as a transistor, a feedback resistor for deriving therefrom a signal that is proportional to current, and a constant voltage device such as a "Zener" diode connected in series to each other, is connected to the lead-in wires, so that at least substantially all of the power supply current



passes through the adjustable resistance and a portion of the load current flows through the constant voltage device to obtain the constant voltage thereacross. The transducer has a pick-up for the quantity to be measured such as a float-operated adjustable resistor or an oscillator biased magnetic pick up device is energized by the constant voltage device and provides an electrical signal, which, together with the feedback signal adjusts the resistance so that the current represents the quantity to be measured.

ERRATUM

For Class 324—3 see:
Patent No. 3,742,341

3,742,343

ION GAUGES

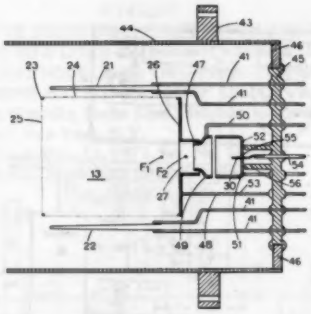
Lawrence Graham Pittaway, Crawley, Sussex, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,157

Claims priority, application Great Britain, Oct. 29, 1969, 53,007/69

Int. Cl. G01n *27/00, 27/62*

U.S. Cl. 324—33 **7 Claims**

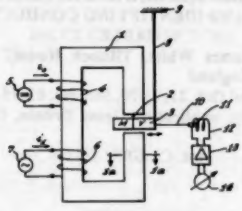


An ion guage comprising a conducting cylinder closed at one end; a pair of cathodes within the cylinder; a cylindrical grid between the cathodes and having a wire mesh peripheral walls relatively transparent to electrons, which grid is bounded at one end by a wire mesh wall and at the opposite end nearer the closed end of the conducting cylinder by an apertured metal wall; means adjacent to the aperture for extracting and converging ions, and an electrode for collecting extracted ions.

3,742,344
APPARATUS FOR MEASURING THE DIFFERENCES IN MAGNETIC SUSCEPTIBILITIES OF GASES

Heinz Hummel, Fasanenweg 14, Konigstein-Johanniswald, Germany

Filed Dec. 29, 1971, Ser. No. 213,576
Int. Cl. G01r 33/12
U.S. Cl. 324—36 11 Claims

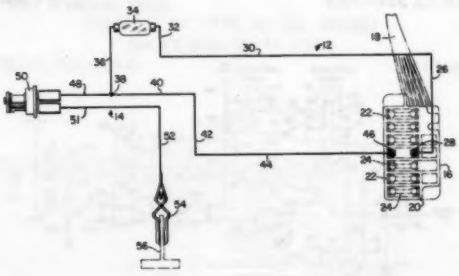


Apparatus for measuring the difference in magnetic susceptibility of a sample gas and of a reference gas, the reference gas having particular, constant susceptibility; a magnetic circuit has at least one measuring gap with a plane or line of symmetry as to the magnetic field in the gap or of the gaps; a test body including two chambers of symmetrical configuration in relation to each other, one chamber provided for the reference gas, the other for the sample gas is resiliently suspended in the gap so that for zero reaction force the test body is symmetrically disposed in the gap or gaps with reference to the plane or line of symmetry (equilibrium position) when the contents of the chambers have equal magnetic susceptibility whereby the body extends in zones of magnetic inhomogeneity with similar volume as to portions of the body defining the two chambers.

3,742,345
SHORT FINDER WITH A PAIR OF INDICATORS HAVING DIFFERENT RESISTANCE VALUES AND ACTUATED BY DIFFERENT CURRENT MAGNITUDES

Benjamin R. Lacey, 8238 Forrest Avenue, Philadelphia, Pa.

Continuation-in-part of Ser. No. 818,575, April 23, 1969, abandoned. This application May 12, 1971, Ser. No. 142,765
Int. Cl. G01r 31/08
U.S. Cl. 324—52 1 Claim

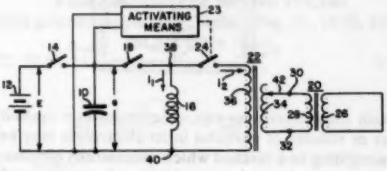


A Short Finder including a primary circuit connected into an automotive terminal block, with the primary circuit having indicating means such as a bulb that is actuated by a high current. The primary circuit is linked to a secondary circuit which includes a buzzer. Until the short in an accessory circuit is located and corrected, the resistance added to the primary circuit is very low (because of the short) and therefore the indicator light of the primary circuit will remain lit because of the high current. When the short in the accessory circuit is located and corrected, the resistance in the primary circuit becomes relatively large and is large as compared to the resistance in the secondary circuit. Therefore the secondary circuit now draws a sufficient amount of current to actuate the buzzer in the secondary circuit. In view of the foregoing the technician knows that so long as the bulb in the primary circuit is lit, he has not found and corrected the short, in the accessory circuit. As soon as the short is located and corrected the bulb will go out and the buzzer will sound, and in this way the technician knows he has completed his job. It is preferred that the secondary circuit have a resistance of at least 10 times the primary circuit (excluding the resistance of the accessory-clock, dash lights, etc.—in the particular accessory circuit involved).

3,742,346
SURGE GENERATOR FOR TRANSFORMER TESTING

Theodore R. Specht, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 23, 1971, Ser. No. 173,746
Int. Cl. G01r 31/02, 31/06
U.S. Cl. 324—55 7 Claims

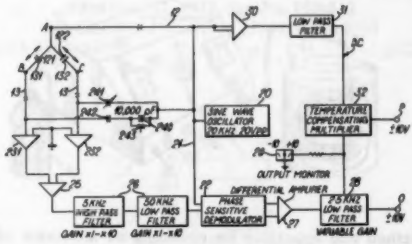


Apparatus and method for testing short-circuited power transformers. A capacitor, which has been charged to a predetermined voltage, is connected in parallel with an inductor. When the voltage of the discharging capacitor goes through zero, the shorted transformer being tested is connected across the inductor. A matching transformer may be used between the transformer being tested and the inductor for adjusting the surge generator voltage and impedance to match that of the short-circuited power transformer.

3,742,347
SHAFT MOVEMENT/DIFFERENTIAL PRESSURE MEASURING APPARATUS EMBODYING CAPACITIVE TRANSDUCERS

Hyman Walton, Seascale, England, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation-in-part of Ser. No. 135,224, April 19, 1971. This application Aug. 25, 1971, Ser. No. 174,874
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 6 Claims



Measuring apparatus including a capacitive transducer which comprises members between which a first capacitance increases and a second capacitance simultaneously decreases in accordance with the magnitude of the physical quantity being measured. The first and second capacitances are connected as two arms of a four-arm bridge having as each of the

two other arms a charge amplifier. Means are provided for applying an AC carrier waveform to the junction of the first and second capacitances and for demodulating the differential output of the two charge amplifiers to give an output representative of the magnitude of the physical quantity.

3,742,348

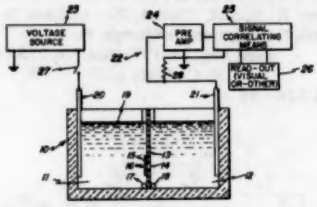
NOISE FREE SMALL PARTICLE ANALYSIS

David C. Golibersuch, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,825

Int. Cl. G01n *27/00*

U.S. Cl. 324—71 CP **8 Claims**



Certain characteristics, e.g., electrophoretic mobility and number or volume of particles in an electrolyte may be measured according to a method which successfully eliminates the effect of system thermal noise. Nonconducting particles are urged through a pore in a nonconducting membrane by, for example, an electric field. Such passage causes the resistance of the pore to vary with time and, via a suitable electrical circuit, results in a time varying voltage being developed across a load. This voltage is sensed and a function is computed, which function is the time average of the product of the voltage $V(t)$ at time (t) and the voltage $V(t+\Delta t)$at some delayed time $(t+\Delta t)$ for one or more values of the delay time (Δt). The resultant function is closely indicative of certain characteristics, e.g., electrophoretic mobility and number or volume of particles of a given specie, and is able to represent characteristics of several specie in the same measurement.

3,742,349

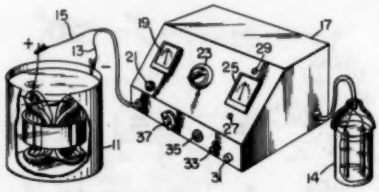
METHOD AND APPARATUS FOR QUANTITATIVELY EVALUATING INTEGRITY OF WINDING INSULATION

Hugh H. Richardson, New Haven, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed May 6, 1971, Ser. No. 140,914

Int. Cl. G01r *31/12*

U.S. Cl. 324—54 **10 Claims**



Method and apparatus for obtaining an indication of the overall integrity of an electrically insulative material supported on an electrical conductor which in turn may be accommodated on an electrically conductive structure such as a magnetic core. The conductor and conductor accommodating structure are preferably completely surrounded by a conductive fluid, e.g., tap water; a preselected voltage is applied across the conductor and fluid; and the resistive and capacitive components of current flowing through the conductor and fluid are then determined and compared, preferably by determining the relationship of one current component to the other current component. This relationship is referred to herein as the "DF" or dissipation factor, and is indicative of the overall integrity and insulating quality of the electrically insulative covering.

3,742,350

PULSE TRAIN METHOD AND APPARATUS FOR LOCATING AND IDENTIFYING CONDUCTORS IN A CABLE

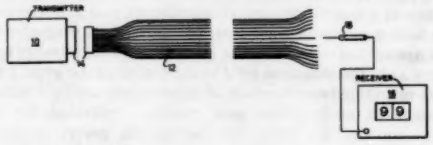
David Walter James White, Tilstock House, Tilstock, near Whitchurch, England

Filed Oct. 21, 1970, Ser. No. 82,751

Claims priority, application Great Britain, Oct. 22, 1969, 41,719/69

Int. Cl. G01r *19/16*

U.S. Cl. 324—66 **8 Claims**



A system for testing the individual conductors in a multicore cable, such as a telephone cable by passing along a conductor under test a series of pulse trains. The system offers a number of facilities. An individual wire can be located and identified and the system can give an indication of a short circuit between a conductor under test and any other conductor in the cable.

3,742,351

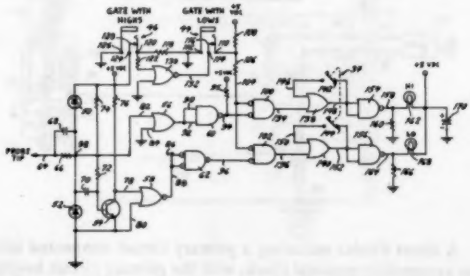
DIGITAL TEST PROBE WITH SIGNAL LATCHES AND CONDITIONABLE GATING

James A. Palmer, Willingboro, N.J., and Richard L. Longcoy, Lansdale, Pa., assignors to Nu-Concept Computer Company, Norristown, Pa.

Filed July 17, 1970, Ser. No. 55,798

Int. Cl. G01r *19/16, 31/02*

U.S. Cl. 324—72.5 **7 Claims**



A test probe for digital electronic circuitry which includes a discriminator for distinguishing between logical low, neutral and logical high voltages. The test probe also includes indicating lamps for displaying the results of the discriminator. Latching means are also provided so that the receipt of a pulse can be stored and a lamp energized to indicate the receipt of the pulse.

3,742,352
APPARATUS AND METHOD FOR MEASURING AND ANALYZING DYNAMIC PROCESSES

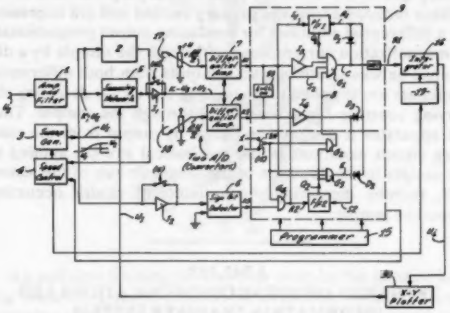
Hartmut Euer, Bad Wiesseestrasse 2, and Gunter Pauli, Aindorfer Strasse 112, both of Munich, Germany

Continuation-in-part of Ser. No. 30,885, April 22, 1970, Pat. No. 3,665,505. This application Nov. 26, 1971, Ser. No. 202,443

Claims priority, application Germany, Dec. 2, 1970, P 20 59 195.1

Int. Cl. G01r 23/16, 27/02

U.S. Cl. 324—77 A 12 Claims



Apparatus and method for analyzing dynamic processes represented by a particular time variable information signal within a range for amplitudes of the signal, wherein a signal analyzing amplitude band is defined by dual analog to digital conversion to separate signal peaks (positive or negative) when occurring within the band. The digital signals are processed as logic signals, whereby the sign bit is used to provide particular distincting between relative and absolute peaks. By means of scan signal the analyzing band is shifted across the amplitude range and the detected peaks are accumulated as statistical representation in dependence upon the position of the analyzing band within the amplitude range.

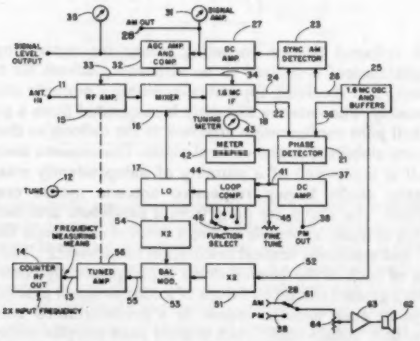
3,742,353
FREQUENCY MEASURING APPARATUS INCLUDING PHASE-LOCKED LOOP

Frank E. Parisi, Waltham, Mass., assignor to Parisi Associates, Inc., Waltham, Mass.

Filed Sept. 27, 1971, Ser. No. 183,986

Int. Cl. G01r 23/14, 23/00

U.S. Cl. 324—79 D 2 Claims



The frequency of a received r-f input signal is accurately measured over a wide dynamic range synchronously detecting the signal with a superheterodyne receiver at intermediate frequency, phase locking the i-f signal to that of a reference signal, applying this reference signal to a frequency doubler whose output is applied to the modulating input of a balanced modulator energized on its carrier input by the output of another frequency doubler that doubles the frequency of the same local oscillator that is mixed with the input signal to provide the intermediate frequency signal. The output of the balanced modulator may then be applied to a tuned amplifier which provides as an output a signal of frequency exactly twice the frequency of the input signal that may then be conveniently measured, such as with a counter. The apparatus includes a phase-locked loop that adjusts the frequency of the local oscillator so that the input signal is beat down exactly to the intermediate frequency.

3,742,354
METHOD AND APPARATUS FOR CHANGING MEASURING ITEMS AND MEASURING RANGES

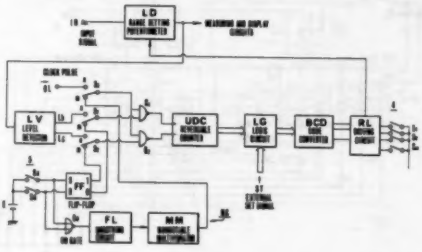
Takashi Sugiyama, Tokyo, Japan, assignor to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Aug. 18, 1971, Ser. No. 172,740

Claims priority, application Japan, Aug. 21, 1970, 45/73338

Int. Cl. G01r 15/08

U.S. Cl. 324—115 6 Claims



In a method of measuring various input signals over a wide range by combining one of a plurality of measuring items and one of a plurality of measuring ranges, the measuring item and measuring range are changed by manually selecting a measuring item, simultaneously shifting the position of the decimal point to the position of the minimum sensitivity of the selected measuring item, and then successively shifting the position of the decimal point until a desired range is reached.

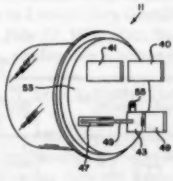
3,742,355
ELECTRIC METER CONSTRUCTION HAVING CIRCUIT INTERRUPT ELEMENTS

William Darling, 1552 Farrow Road, Memphis, Tenn.

Filed Nov. 12, 1971, Ser. No. 198,312

Int. Cl. G01r 1/06; H01r 13/44; H02b 9/00

U.S. Cl. 324—149 3 Claims



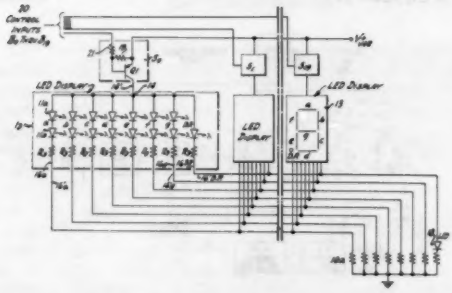
An electric meter having the back side thereof provided with a plurality of cliplike sockets and a plurality of bladelike terminals. Engaging the meter of the present invention to the usual meter base respectively opposingly presents the meter sockets thereof to the usual base sockets of the meter with a

spaced distance therebetween and simultaneously engages the bladelike terminals with other ones of the base sockets. A plurality of knifelike members are included and are respectively removably received in certain ones of the base sockets and the opposing meter sockets when the meter of the present invention engages the meter base, thus bridging the spaced distance and rigidly supporting the meter to the meter base. One embodiment comprises constructing the knifelike members from an electrical conducting substance for completing an electrical circuit therewith. A second embodiment comprises constructing the knifelike members from an electrical insulating substance for interrupting an electrical circuit therewith, i. e., for discontinuing electric service to a dwelling or the like and preventing the unauthorized use of electricity.

3,742,356
TESTING APPARATUS FOR LIGHT EMITTING DIODES AND METHOD THEREFOR

Leslie E. Brock, Saratoga, Calif., assignor to Kerant Electronics Ltd., Santa Clara, Calif.

Filed Sept. 7, 1971, Ser. No. 178,342
Int. Cl. G01r *31/26*
U.S. Cl. 324—158 D **5 Claims**

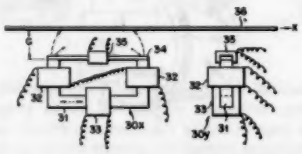


Light emitting diode testing apparatus and method sequentially couples a common voltage source to a number of diodes equal to the reciprocal of their duty cycle and applies to them a voltage magnitude to produce a current equal to the reciprocal of the duty cycle times the average current rate to thereby effectively test the diodes for poor die attaches or lead bonding.

3,742,357
NONCONTACT ELECTRIC APPARATUS FOR MAGNETICALLY MEASURING STRAINS

Moritada Kubo, Shibuya-ku, Tokyo; Kuniji Asano, Kawasaki-shi, and Masao Obama, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 28, 1971, Ser. No. 213,133
Claims priority, application Japan, Dec. 28, 1970, 45/119778; Sept. 1, 1971, 45/67209
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 ST **8 Claims**

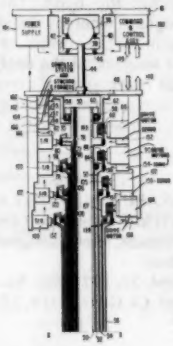


The apparatus of this invention includes a sensor unit having its substantially U-shaped core wound with primary and secondary coils and the ends of both legs of the core bridged by a nonmagnetic material wound with a leakage magnetic flux pickup coil. The sensor unit is disposed on one side of a magnetic or eddy current conductive sample with two opposite sides sufficiently close thereto for magnetic linkage. The primary coil of the sensor unit is magnetized by an A.C. source for controlling the electromotive force to be induced in the sample by magnetic fluxes passing through the sample from the sensor unit so as to keep it constant. Outputs from both secondary coil and leakage magnetic flux pickup coil of the sensor unit are supplied to a differential amplifier for producing output voltage corresponding to the varying magnetic flux passing through the sample by a difference between the two outputs. Output from the leakage magnetic flux pickup coil of the sensor unit and output proportionate to the voltage induced across the primary excited coil are impressed on a differential amplifier for producing output proportionate to magnetization current flowing through the sample by a difference between both outputs. Outputs from both differential amplifiers are supplied to a sampling circuit for detecting the varying coercive force conducted through the sample. Thus the apparatus is designed to detect by output from the sampling circuit variations in the mechanical stresses applied to the sample in the direction of the magnetic axis of the sensor unit, thereby measuring the amounts of strains occurring across the sample.

3,742,358
TETHERED AIRBORNE COMMUNICATIONS AND INFORMATION TRANSFER SYSTEM

Richard S. Cesaro, 6264 Clearwood Road, Bethesda, Md.

Filed Dec. 30, 1970, Ser. No. 102,597
Int. Cl. H04b *1/60*
U.S. Cl. 325—3 **13 Claims**



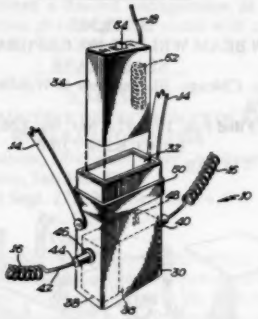
A tethered balloon including means for controlling the height thereof is utilized as an airborne platform for transmitting and receiving apparatus including a multiple antenna assembly. The antenna assembly is suspended from a gimbal or ball joint configuration attached to the balloon so that it is gravity stabilized in the vertical plane. The antenna assembly itself is comprised of a plurality of independently rotatable coaxial shafts having respective antenna means coupled thereto. The shafts are hung from a pendulum arm member which is freely moveable within a vertical cone angle limit of 45° and maintains vertical orientation to within ±2°. The rotation of each of the coaxial shafts is independently controlled from a ground station by means of a control signal to selectively point each antenna means in a predetermined compass direction. Additionally, each coaxial shaft couples respective transmitter-receiver means to its antenna means in order to provide selective signal transfer between the ground station and/or other similar airborne systems.

3,742,359

AUDITORY TRAINING DEVICE WITH RADIO RECEIVER AND HEARING AID

Donald J. Behymer, Minneapolis, Minn., assignor to Textron, Inc., Providence, R.I.

Filed Mar. 4, 1971, Ser. No. 120,813
Int. Cl. H04b 1/00
U.S. Cl. 325—26 2 Claims



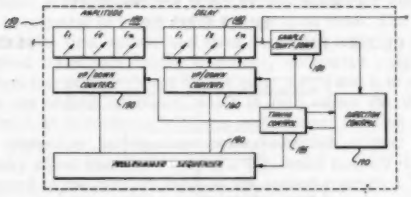
An auditory training device to be worn by the hard-of-hearing wherein a radio receiver is housed in a case having a chamber into which a pocket-type hearing aid with an input induction coil may be inserted. An output induction coil encircles the chamber and is connected to the output terminals of the radio receiver to generate an electromagnetic field in the chamber. A radio signal transmitted from an instructor is received by the radio receiver and converted to an audio frequency output signal which is conducted to the output induction coil to establish an electromagnetic field in the chamber. The input induction coil of the hearing aid is coupled by the field and the output signal is induced in the input coil of the hearing aid when the hearing aid is in the chamber, thus permitting a hard-of-hearing person to hear the audio frequency output signal over his hearing aid.

3,742,360

AUTOMATIC EQUALIZER CIRCUIT

Robert G. Ragsdale, Hollywood, Fla., assignor to Milgo Electronic Corporation, Miami, Fla.

Filed Nov. 18, 1969, Ser. No. 877,676
Int. Cl. H03h 7/36
U.S. Cl. 325—42 15 Claims



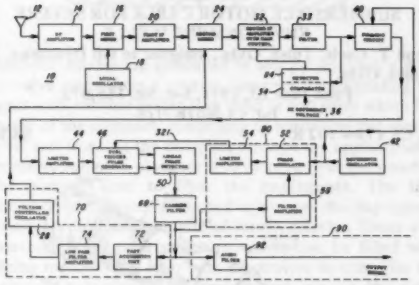
An automatic equalizer circuit for use in data transmission systems is disclosed. A transmitter includes a signal generator for generating and transmitting test patterns over a narrow bandpass-limited communication link. An automatic equalization circuit is connected at a receiver station and includes a plurality of amplitude and delay sections at selected frequencies, which sections are variable in response to electrical control signals. A test pattern under ideal amplitude and delay characteristics for the link exhibits an analog shape that is predictable. For a given amplitude and delay setting in the equalizer sections, the received test signal is sampled and counted down automatically to a predetermined level. The number of counts required to reduce the sample to the predetermined level is accumulated for a series of samples, and then the number of counts for another series of samples is also accumulated, for comparison with the previous accumulation. The compared accumulations are responded to by a control circuit which varies 1 amplitude and/or delay section in the proper direction to quickly achieve equalization. A program sequencer addresses all sections as many times as necessary and in a proper order to achieve the ideal delay and amplitude settings for effective equalization of the communication link.

3,742,361

THRESHOLD EXTENSION PHASE MODULATED FEEDBACK RECEIVER

Cameron Bernard Wason, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 28, 1971, Ser. No. 147,999
Int. Cl. H04b 1/06
U.S. Cl. 325—346 8 Claims



In a frequency modulation receiver; (1) a feedback loop returns a control voltage to a voltage controlled oscillator from a bistable switching circuit used as a phase detector; (2) a fast signal acquisition unit of the main feedback loop provides a DC signal of proper sign and voltage to accelerate signal acquisition; (3) an assist means provides high frequency correction at the phase detector to avoid an overload effect occurring in the main feedback loop and a resulting threshold effect in the receiver; and (4) an IF summing circuit increases by a factor of four the amplitude signal-to-noise power ratio of the incoming signal prior to its introduction into the phase detector thereby making it possible for the phase detector to remain above threshold to a lower input signal-to-noise ratio.

3,742,362

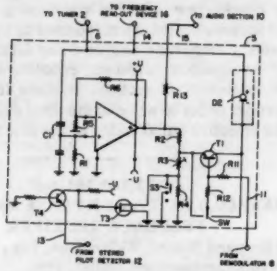
SIGNAL-SEEKING COMMUNICATIONS RECEIVER WITH BIDIRECTIONAL FREQUENCY SWEEP CAPABILITY

Heinz Hubert Meurer, and Willy Kanow, both of Berlin, Germany, assignors to Loewe-Opta GmbH, Berlin, Germany

Filed July 27, 1971, Ser. No. 166,432
Claims priority, application Germany, July 30, 1970, P 20 38 694.1
Int. Cl. H04b 1/34
U.S. Cl. 325—470 15 Claims

A voltage-tuned, mono-stereo, signal-seeking receiver automatically sweeps any desired portion of the received band in either direction. During forward sweeps, a capacitor whose voltage controls the tuning stage charges through an operational amplifier which biases a transistor in a discharge path into a disabled state. Upon the occurrence of a signal whose detected amplitude is above a threshold corresponding to the transistor bias, the discharge path is activated to stop the forward sweep. During each reverse sweep, the discharge of the capacitor yields an oppositely poled bias voltage which locks

the transistor in its conductive state. The reverse sweep continues until another signal exceeding the threshold in the opposite direction is detected to disable the transistor. Facilities



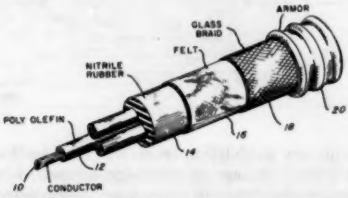
are provided to lock out mono stations during each sweep, as well as to provide auxiliary pre-select tuning and AFC capabilities.

3,742,363

SUBMERSIBLE MOTOR CABLE FOR SEVERE ENVIRONMENT WELLS

Joseph T. Carle, Tulsa, Okla., assignor to Oil Dynamics, Inc., Tulsa, Okla.

Filed June 23, 1971, Ser. No. 155,872
Int. Cl. H01b *7/18*
U.S. Cl. 174—102 R **5 Claims**



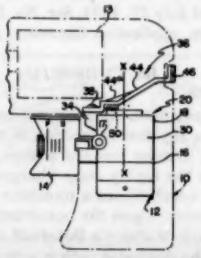
An oil well cable for submerisble motors for use in medium to severe environmental conditions including high temperature, high pressures and/or chemical corrosiveness. The insulated conductor and/or groups or conductors are supported by exterior wrappings of felt about which is a supportive glass braid material. Further support is provided by a metallic armor wrap.

3,742,364

REVERSING SWITCH LEVER

Benjamin H. Matthews, Peninsula, Ohio, assignor to Lucerne Products, Inc., Northfield, Ohio

Filed Oct. 22, 1971, Ser. No. 191,746
Int. Cl. H01h *9/06, 21/10*
U.S. Cl. 200—157 **9 Claims**



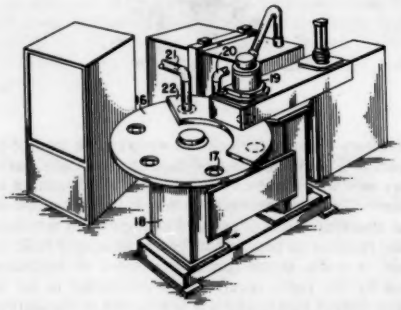
A portable electric tool including a reversible rotary electric motor and switch mechanism for reversing the direction of rotation of the motor. The switch mechanism includes a rotary holder member and an operating lever for the rotary holder member of the reversing switch mechanism. The lever extends obliquely outwardly relative to the rotary axis of the holder member and toward the rear side of the tool and slot means are provided on the lever coacting with projection means on the holder member for causing rotation of the holder member upon pivotal movement of the lever, to thus cause reversal of the direction of rotation of the motor.

3,742,365

ELECTRON BEAM WELDER INCORPORATING SLIDING SEAL MEANS

David Sciaky, Chicago, Ill., assignor to Welding Research, Inc., Chicago, Ill.

Filed Feb. 15, 1972, Ser. No. 226,611
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB **7 Claims**



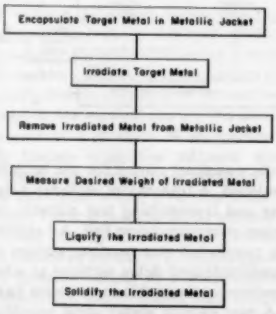
The present invention relates to apparatus for welding by means of an electron beam and describes a sealing system which allows a machine member carrying an electron beam gun and a second member carrying parts to be welded to slide one with respect to the other while maintaining a low pressure in the electron gun and the area surrounding the parts to be welded. The sliding seal apparatus is applied to linear or rotary translation of the electron beam gun support means with respect to the work holding means.

3,742,366

DENSIFICATION OF IRRADIATED METAL

Delmar W. France, Fremont, and Arlo D. Ketcham, Livermore, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Nov. 18, 1970, Ser. No. 90,517
Int. Cl. G21h *5/00*
U.S. Cl. 250—106 S **11 Claims**


Encapsulate Target Metal in Metallic Jacket
Irradiate Target Metal
Remove Irradiated Metal from Metallic Jacket
Measure Desired Weight of Irradiated Metal
Liquify the Irradiated Metal
Solidify the Irradiated Metal

A method of producing dense bodies of irradiated metal in various geometrical shapes to achieve near theoretical density

specimens of such metal is presented. These specimens are excellent radiation sources of high specific activity for medical therapeutic and industrial radiographic applications. The process starts with a target metal which is encapsulated in a metallic jacket and irradiated with a flux sufficient to convert a substantial portion of the target metal to a radioisotope. The irradiated metal is removed from the capsule and a given amount of the irradiated metal sufficient to give a known energy output is segregated and either (a) arc melted or (b) inductively cast to achieve a desired configuration as a radiation source. The process gives irradiated metal with a very small focal point and a very high density.

3,742,367

NON-DESTRUCTIVE DETECTION PROCESS FOR NUCLEAR FUEL RODS

Leonard N. Grossman, Livermore, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Sept. 22, 1970, Ser. No. 74,470
Int. Cl. G01t *3/00*
U.S. Cl. 250—391 **10 Claims**

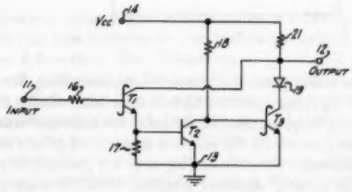
A method of detecting moisture and reactive gases in assembled nuclear fuel rods is disclosed in which an alloy of zirconium, nickel and titanium is added to the fuel rod. The fuel rod is uniformly heated for a sufficient time to vaporize moisture in the fuel rod enabling reaction between the alloy and the moisture and reactive gases. The presence of reaction products containing hydrogen can be detected by neutron radiography.

3,742,368

PULSE GENERATOR USING SCHOTTKY EFFECT TRANSISTORS

Amando E. Gelabert, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Apr. 24, 1972, Ser. No. 246,884
Int. Cl. H03k *5/00*
U.S. Cl. 307—260 **9 Claims**



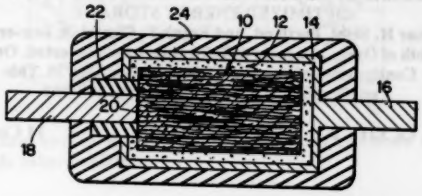
A pulse generating circuit which produces a single output pulse in response to a step signal change at its input. The circuit includes first, second and third transistors with the first and third transistors having commonly connected outputs. The first transistor is driven by the input signal and it in turn drives the second transistor which in turn drives the third transistor. In accordance with one embodiment the first and third transistors having commonly connected outputs are Schottky effect transistors having a very small turn off delay compared to the turn off delay of the second transistor. The first and second transistors are normally on so that the output terminal is low. The third transistor is normally off. In response to a step signal change at the input of the first transistor, the first transistor goes off. Since the second transistor is a slow turn off device compared to the first and third transistors, the third transistor also stays off for a time. With both the first and third transistors off the output terminal goes high. After a period equal to the turn off delay of the second transistor, however, the second transistor turns off which turns on the third transistor, thus causing the output terminal to again go low. The duration of this pulse at the output terminal is proportional to the turn off delay of the second transistor.

3,742,369

CAPACITOR WITH FIBERED VALVE METAL ANODE

Richard W. Douglass, 12 Oakland Ave., Needham, Mass.

Division of Ser. No. 839,024, July 3, 1969, abandoned, which is a continuation-in-part of Ser. No. 807,129, March 13, 1969, abandoned, and a continuation-in-part of Ser. No. 869,404, March 13, 1969, Pat. No. 3,681,063, said Ser. No. 807,129, is a continuation of Ser. No. 626,773, March 29, 1967, abandoned, said Ser. No. 869,404, is a division of Ser. No. 626,773, March 29, 1967, abandoned. This application Nov. 8, 1971, Ser. No. 196,812
Int. Cl. H01g *9/05*
U.S. Cl. 317—230 **4 Claims**



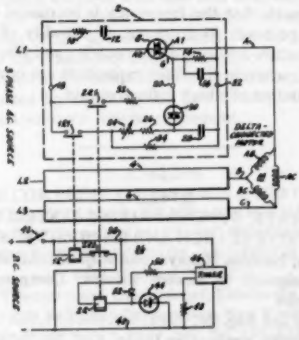
Capacitor anodes are produced in situ by sintering a powdered valve metal into a porous compact, impregnating the compact with another material in fluid or soft form which fills the pores of the compact, solidifying or hardening the second material and working the compact through the application of compressive forces to elongate it to thereby fiber the powders of the compact and to fiber the impregnant. The thus produced fiber compact is leached to remove the impregnant materials, to produce a bundle of interconnected fibers with an interconnected pore structure which can be filled with anodizing medium and later with electrolyte to comprise the capacitor. Alternatively, the impregnant can be the valve metal and the original compact can be removed after elongation and fibering.

3,742,370

SOFT START A.C. MOTOR CONTROL

James E. Hansen, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Dec. 20, 1971, Ser. No. 210,023
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **12 Claims**



A soft start control for a delta-connected motor or an ungrounded Y-connected (star-connected) motor or the like polyphase system. To reduce the accelerating torque of a polyphase motor and thereby obtain a soft start characteristic that reduces stress and strain on the driven parts until normal running speed is reached, a gated A.C. switching device such

as a triac is used in the power lines of the polyphase A.C. source. A simple time delay firing circuit connected across each triac controls the latter so that current flow is interrupted in each of the phases for a predetermined period of time during each half-cycle in repetitive sequence, the net effect being to reduce the effective voltage applied to the motor. After a predetermined time of reduced voltage acceleration sufficient to bring the motor up to or near running speed, a timer controls the firing circuit to apply full line voltage to the motor.

3,742,371

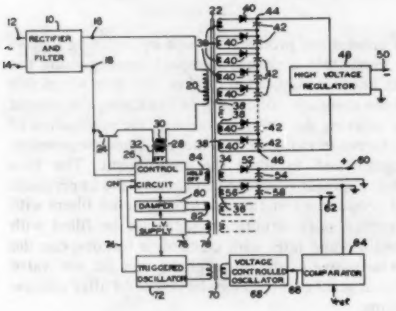
WIDE RANGE REGULATED POWER SUPPLY UTILIZING OPTIMIZED ENERGY STORAGE

Arthur H. Seibt, Portland, and Frank T. Churchill, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 16,340, March 4, 1970. This application Dec. 16, 1971, Ser. No. 208,992

Int. Cl. H02m *3/32*

U.S. Cl. 321—2 **11 Claims**



A fly-back type power supply includes a transformer, the primary winding of which is periodically connected to a DC source to establish current through such winding. When this current increases to a predetermined optimum value, the current flow through the primary winding is interrupted for producing collapse of the transformer's magnetic field and generation of an output in the transformer's secondary windings. The frequency at which the primary is periodically connected to the DC source is controlled by a secondary output voltage such that the frequency is increased when such output voltage tends to decrease. A plurality of secondary windings are each connected to a rectifier and filter capacitor combination, wherein the filter capacitors are coupled in series for production of a high voltage output.

3,742,372

AUTOMATIC SYNCHRONIZING SYSTEM WITH REPETITIVE SEARCH AND RAPID ACQUISITION

Kozo Uchida; Naohisa Nakaya, and Koji Suzuki, all of Tokyo, Japan, assignors to Iwatsu Electric Company Limited, Tokyo, Japan

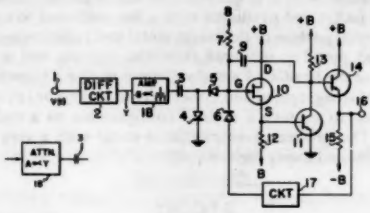
Filed Aug. 20, 1969, Ser. No. 851,588

Claims priority, application Japan, Aug. 23, 1968, 43/59920

Int. Cl. H03k *1/00*

U.S. Cl. 328—63 **4 Claims**

In a system for deriving a synchronizing output signal by sampling the input signal with the derived output signal, a control signal is derived in response to the sampled asynchronous condition of the input and output signals for adjusting the frequency of the output signal to achieve the synchronous condition. The frequency adjustment progresses over a predetermined range and is reset when it reaches the end of the range. The adjustment is advanced by a time derivative



signal derived from the asynchronous condition and is arrested by the time derivative being minimum which corresponds to the synchronous condition.

3,742,373

PULSE GENERATORS

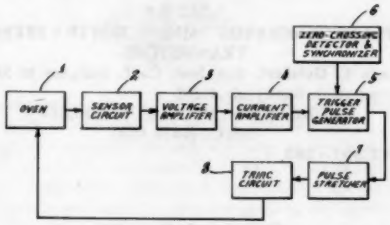
John Patrick Armstrong, Flackwell Heath, and Melvin Alexander Tennant, Holmer Green, both of England, assignors to Perkin-Elmer Limited, Beaconsfield, Bucks, England

Filed Nov. 5, 1971, Ser. No. 196,013

Claims priority, application Great Britain, Nov. 6, 1970, 52,903/70

Int. Cl. H03k *1/02, 1/16*

U.S. Cl. 328—63 **7 Claims**



A trigger pulse generator circuit for controlling, for example, an AC thyristor system which in turn controllably supplies a final device (e.g, an electrical heater for a temperature-controlled oven), in which the relative number of pulses supplied (of the maximum possible during a given period) is proportional to the input ("demand") signal. Thus the supply to the final device is quantitatively proportional to the measured demand (e.g., by a temperature sensor), thereby causing close tracking of the desired condition (e.g., temperature). In fact, the entire system may be operated in the "open loop" mode since the supply inherently tends to match quantitatively the required amount (i.e., the "demand") to cause the final device to reach a desired setpoint. In closed loop operation, excursions of the effect of the final device from the setpoint are smaller than with existing systems using nonquantitatively supplied pulses where any time lag in the sensor relative to the condition will tend to cause "overshoot" (e.g., too many pulses before the sensor responds to the change).

3,742,374

TRANSDUCER DEVICE

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 802,370, Feb. 26, 1969, Pat. No. 3,638,110. This application June 9, 1971, Ser. No. 151,407

Int. Cl. G06g *5/00, 15/00*

U.S. Cl. 328—110 **6 Claims**

A transducer applying the Johnsen-Rahbek effect wherein the frictional force between two electrodes separated by elec-

trostatically chargeable material is augmented by an increase in potential applied to the electrodes. The transducer measures or reads out the potential or charge patterns on the elec-

trostatically chargeable material which may be a semiconductor, dielectric or other charge carrying surface and converts the force variations into electrical signals.

3,742,375

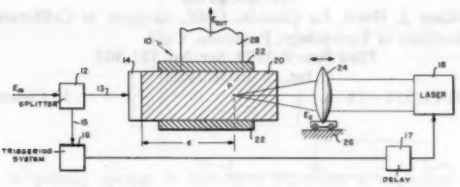
CONTINUOUSLY VARIABLE DELAY LINE

Oscar G. Farah, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1972, Ser. No. 256,750

Int. Cl. H03h *7/30*; 333 *30 R*

U.S. Cl. 330—5.5 **2 Claims**



Microwave information is applied to a $LiNbO_3$ crystal by way of a thin film transducer, and is then convolved with an ultrasonic δ-function. The δ-function is generated by a laser beam and is applied to the crystal at a particular point. The point at which the δ-function is applied to the crystals affects the convolved signal such that the original microwave information may be delayed by a particular amount of time.

The delay time is a function of the laser position and as a result may be made to vary. Also, since the principles of convolution are employed, the delayed microwave information will also be amplified.

3,742,376

VIDEO AMPLIFIERS

Donald Henry Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

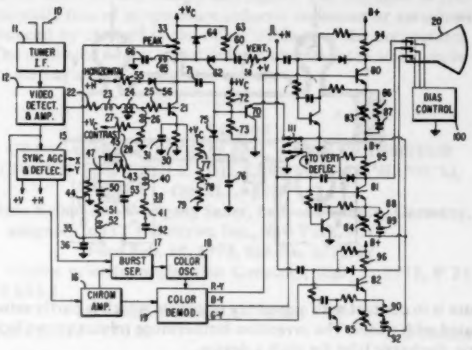
Division of Ser. No. 37,780, May 15, 1970, Pat. No. 3,619,488. This application July 6, 1971, Ser. No. 159,778

Int. Cl. H03f *3/04*

U.S. Cl. 330—21 **6 Claims**

A transistor video amplifier employs coupling from a collector load potentiometer to an emitter common terminal. The variable arm of the potentiometer is coupled to a peaking capacitor and is further coupled to the emitter electrode through selective networks. At one setting of the potentiometer maximum peaking is obtained by an AC ground provided for the selective networks, and at a second setting the capacitor shunts the collector to depeak the response.

The emitter circuit of a transistor video amplifier includes a contrast control which serves to change the gain of the transistor amplifier while maintaining constant peaking. This is afforded by using a bypass capacitor for increasing gain while further serving to introduce a second resonant circuit in shunt with a first circuit via the same capacitor.



These circuits may also be advantageously combined in a single video amplifier.

3,742,377

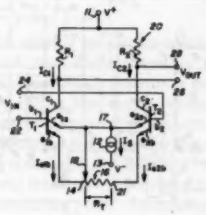
DIFFERENTIAL AMPLIFIER WITH MEANS FOR BALANCING OUT OFFSET TERMS

Robert C. Dobkin, Menlo Park, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed July 8, 1971, Ser. No. 165,796

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **4 Claims**



A differential amplifier comprising a first amplifying circuit including a dual emitter transistor, a second amplifying circuit in parallel with the first amplifying circuit and having a second dual emitter transistor with one of its emitters coupled to one of the emitters of the first transistor and a potentiometer having a resistance element with one end coupled to the other emitter of the first transistor and its other end coupled to the other emitter of the second transistor and its wiper contact coupled to the commonly coupled emitters whereby the collector currents of the first and second transistors can be selectively adjusted by adjusting the potentiometer of the wiper contact relative to the resistance element.

3,742,378

DEVICE FOR PRODUCING STIMULATED INFRARED EMISSION, AN IRASER, BY MEANS OF AN ELECTRIC DISCHARGE IN A GAS MIXTURE WHICH CONSISTS PARTLY OF CARBON DIOXIDE, AND DISCHARGE TUBE FOR SUCH A DEVICE

Abraham Timmermans, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,328

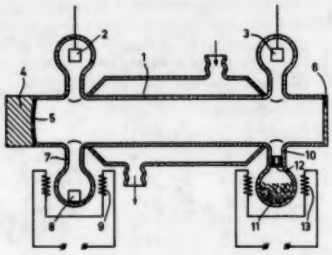
Claims priority, application Netherlands, Nov. 7, 1970, 7016333

Int. Cl. H01s *3/22*

U.S. Cl. 331—94.5 **5 Claims**

The invention relates to a device for producing stimulated infrared emission, an iraser, by means of an electric discharge

in a gas mixture which mainly consists of carbon dioxide, nitrogen, helium and water vapour and in which the gas mix-



ture is in contact with a quantity of zeolite which is partly saturated with water. The invention furthermore relates to an electric discharge tube for such a device.

3,742,379

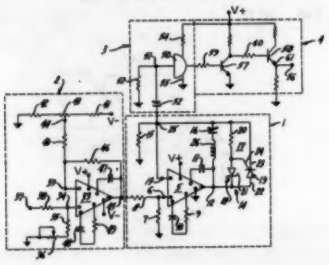
VOLTAGE TO FREQUENCY CONVERTER

Michael B. McLean, Franksville, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Nov. 12, 1970, Ser. No. 88,850

Int. Cl. H03k *4/56*

U.S. Cl. 331—111 **5 Claims**



An operational amplifier having a feedback circuit produces a periodic signal having a frequency linearly proportional to the magnitude of an analog input voltage. The feedback circuit includes three parallel paths, one of which includes a resistor in series with a zener diode, the second of which includes a controlled rectifier having a gate connected to the junction of the resistor and diode and the third of which includes a capacitor. The capacitor charges to the Zener breakdown voltage which then conducts and biases the controlled rectifier into conduction to discharge the capacitor. An output circuit is connected to the capacitor to receive the discharge pulses, which are converted into a square wave signal by a Schmitt trigger circuit. The analog input voltage is amplifier by a differential amplifying section.

3,742,380

PN JUNCTION SEMICONDUCTOR OSCILLATOR DEVICE CONTROLLED BY LIGHT

Masaya Yabe; Masaru Kono; Teizo Takahama, and Katsumi Hirono, all of Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

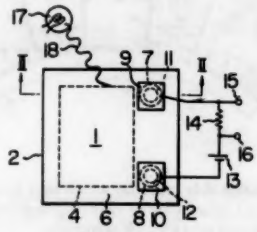
Filed Nov. 8, 1971, Ser. No. 196,297

Claims priority, application Japan, Nov. 11, 1970, 45/97613

Int. Cl. H03b *3/04, 5/24*

U.S. Cl. 331—66 **8 Claims**

An oscillating device comprising a semiconductor oscillating element, an electric source connected to apply a voltage necessary for causing an oscillation to the element, a means for taking out the oscillation output of the element and a means for irradiating light to control the oscillation conditions of the element, said semiconductor oscillating element comprising a semiconductor wafer which comprises a first region of a conductivity type, a second region of a reverse conductivity type and a PN junction formed between said both re-



gions, an injection electrode means provided on said first region at a specific distance from said second region, and an ohmic electrode means provided on said first region at specific distances respectively, from said second region and said injection electrode means. Various modifications and applications of said oscillating device are described.

3,742,381

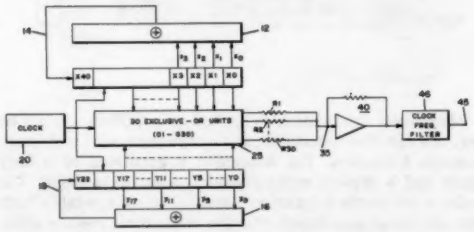
WIDEBAND DIGITAL PSEUDO-GAUSSIAN NOISE GENERATOR

William J. Hurd, La Canada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed June 9, 1971, Ser. No. 151,305

Int. Cl. H03b *29/00*

U.S. Cl. 331—78 **13 Claims**



A wideband digital pseudo-gaussian noise generator is disclosed. It includes two feedback shift registers which provide maximal length pseudo noise sequences. Selected stages of the two registers are fed as inputs to 30 exclusive-OR gates, the stages being selected so that their outputs represent distinct phase shifts of a product sequence. The outputs of the gates are summed to provide the generator's output which approximates gaussian noise over a useful bandwidth of 10MHz.

3,742,382

APPARATUS FOR STABILIZING A LASER TO A GAS ABSORPTION LINE

Peter William Smith, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

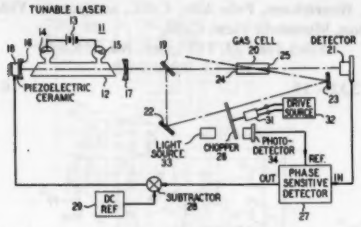
Filed Apr. 3, 1972, Ser. No. 240,479

Int. Cl. H01s *3/10*

U.S. Cl. 331—94.5 **2 Claims**

There is disclosed a frequency-stabilized laser in which a first component of the output beam is passed through a gaseous frequency standard cell in a first direction and then detected while a second component of the beam is passed through the cell in a second direction slightly less than 180° from the first direction so as to avoid subsequent interaction with the apparatus. The detected signal as a function of frequency has a narrow peak centered on the absorption line

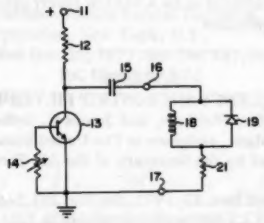
of the gas. The width of this peak is the homogeneous linewidth of the absorbing gas, which is typically much narrower than the Doppler-broadened absorption line. The detected signal is applied through a feedback loop to control the tuning of the laser resonator.



3,742,383
PULSING SYSTEM

Ernest E. Hollis, Bedford, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed July 12, 1971, Ser. No. 161,754
Int. Cl. H03k *3/335*
U.S. Cl. 331—111 **3 Claims**

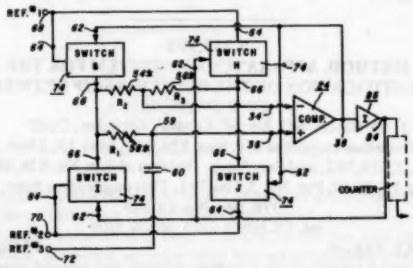


A pulsing system is described in which a capacitor is charged until it reaches the avalanche breakdown voltage of a transistor whereupon it discharges through the transistor and the load. Included in series with the load is the parallel combination of a small inductance and a diode poled to be conductive in the direction of capacitor discharge. During capacitor discharge, the diode short circuits the inductance so as to permit a fast rise time. When the capacitor has discharged and the transistor has again become non-conductive, the reverse voltages caused by the stray reactances appear principally across the small inductance instead of across the load thereby preventing overshoot.

3,742,384
VARIABLE FREQUENCY OSCILLATOR

John F. Breitzmann, Richardson, and Robert P. Lackey, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 7, 1971, Ser. No. 150,498
Int. Cl. H03k *4/50*
U.S. Cl. 331—111 **9 Claims**

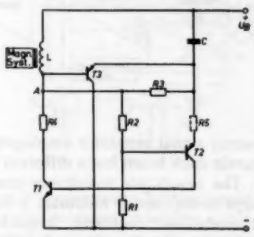


An oscillator circuit comprising a differential comparator having multiple inputs, an inverter, a reference signal generator for producing a two level reference signal connected to one of said inputs, and a timing signal generator for generating a substantially sawtooth shaped timing signal interconnected to the other of said comparator inputs. The oscillator is substantially free of temperature induced variations or variations induced by changes in the offset voltages of the comparator. The oscillator circuit is particularly advantageous when implemented as an MOS integrated circuit.

3,742,385
CROSS-COUPLED COMPLEMENTARY TRANSISTOR CIRCUIT FOR SINGLE COIL ELECTRO-MECHANICAL OSCILLATOR

Hans Keller, and Wolfgang Sauer, both of Freiburg, Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Feb. 18, 1972, Ser. No. 227,369
Claims priority, application Germany, Mar. 3, 1971, P 21 10 023.2
Int. Cl. G04c *3/00;* **H03b** *5/30*
U.S. Cl. 331—116 M **2 Claims**

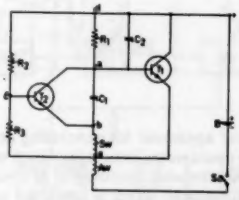


This is a circuit for driving an electro-mechanical oscillator having one coil and two complementary transistors. The emitter resistor of the control transistor is connected to that end of the coil not facing the supply voltage. The emitter capacitor of the control transistor is connected to the supply voltage. A resistor is connected between the coil and the collector of the driving transistor. An auxiliary transistor complementary to the driving transistor is provided so that the base is connected to the connecting point of the resistor and the coil.

3,742,386
AMPLITUDE STABILIZED TRANSISTOR DRIVE CIRCUIT FOR TIME KEEPING DEVICES

Erich Gerum, Nurnberg, Germany, assignor to Diehl, Nurnberg, Germany

Filed June 25, 1971, Ser. No. 156,869
Claims priority, application Germany, June 26, 1970, P 20 31 671.6
Int. Cl. H03b *3/02, 5/36*
U.S. Cl. 331—116 M **7 Claims**



A transistorized amplifier, especially for driving a time-keeping device, in which two transistors, one a driving transistor and the other a control transistor, in the form of an integrated circuit have the collector-emitter path of the driving transistor in circuit with a battery and a driving coil while a control coil and a capacitor is in the base-emitter path thereof.

A charging condenser is in the base-collector path of the driving transistor. The control transistor has the collector-emitter path in parallel with the capacitor and is connected to receive opening pulses to the base thereof which are opposed in phase to the opening pulses supplied to the base of the driving transistor.

3,742,387

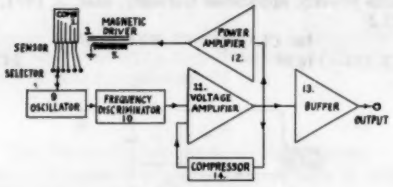
MULTI FREQUENCY MASS SPRING OSCILLATORS

Manfred Davis, 5958 Delafield Avenue, New York, N.Y.

Filed Dec. 8, 1971, Ser. No. 205,873

Int. Cl. H03b *5/30*

U.S. Cl. 331—156 **4 Claims**



A multi frequency signal generator employing a cantilever beam comb wherein each beam has a different natural vibration frequency. The beams are selectively coupled through capacitive pickups to frequency modulate a high frequency oscillator. The modulated oscillator frequency is passed through a frequency discriminator, and the amplified output of the discriminator supplies the signal generator output and also is applied to a magnetic drive circuit for sustaining the selected beam in vibration at its natural frequency.

3,742,388

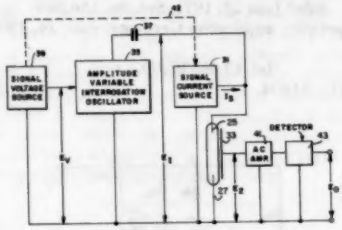
COULOMETER CONTROLLED METHOD AND APPARATUS FOR GENERATING AN ELECTRICAL FUNCTION

Eugene P. Finger, Brewster, N.Y., assignor to Curtis Instruments, Inc., Mount Kisco, N.Y.

Filed July 13, 1971, Ser. No. 162,147

Int. Cl. H03c *1/46*

U.S. Cl. 332—2 **9 Claims**



A method and apparatus for generating an electrical function utilizing a coulometer integrator which modulates an AC signal in accordance with the integral of a variable DC input current. The modulated signal is amplified and demodulated by a detector and fed to a utilization device. Both the AC signal source and the variable DC current source may be controlled by the same or separate control signals, thereby generating a signal having the form of the integral of a function multiplied by either the same function or by a different function.

3,742,389

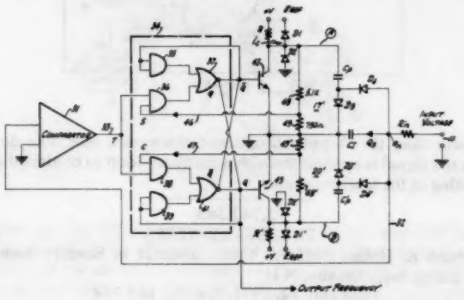
VOLTAGE TO FREQUENCY CONVERTER HAVING DUAL STANDARD CHARGE DISPENSERS

Gary C. Henrickson, Palo Alto, Calif., assignor to Vidar Corporation, Mountain View, Calif.

Filed June 23, 1971, Ser. No. 155,848

Int. Cl. H03c *3/08*

U.S. Cl. 332—19 **6 Claims**



A voltage to frequency converter having a pair of standard charge dispensers each generating a ramp function, the ramp function being utilized in an AND-OR invert gate to provide a free mode of operation.

3,742,390

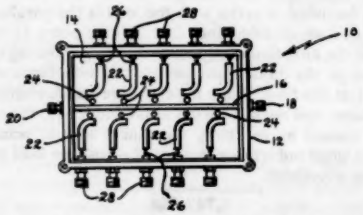
MULTI-FREQUENCY MICROSTRIP FILTER-DETECTOR

Martin R. Stiglitz, Waltham, and James C. Sethares, Lexington, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 23, 1971, Ser. No. 201,348

Int. Cl. H01p *3/08, 5/12;* **H03h** *7/02*

U.S. Cl. 333—6 **4 Claims**



A filter-detector for selecting one or a number of narrow band microwave signals from either a wide band of microwave signals or from a source of spurious signals including a microstrip circuit with coupling strips for coupling frequencies predetermined by resonators located on the circuit board and diodes at the output of each coupler branchline for detecting the signal.

3,742,391

METHOD, APPARATUS AND SYSTEM FOR THE IDENTIFICATION OF THE RELATIONSHIP BETWEEN TWO SIGNALS

Otto J. M. Smith, 612 Euclid Avenue, Berkeley, Calif.

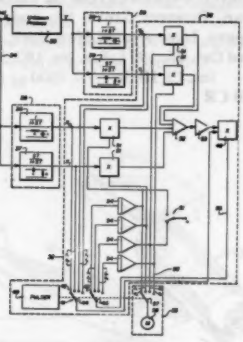
Continuation-in-part of Ser. Nos. 826,085, May 15, 1969, Pat. No. 3,526,761, and Ser. No. , , Division of Ser. No. 826,085, May 15, 1969, Pat. No. 3,526,761. This application Mar. 12, 1970, Ser. No. 18,849

Int. Cl. H03h *7/06;* **H03k** *5/00*

U.S. Cl. 333—6 **13 Claims**

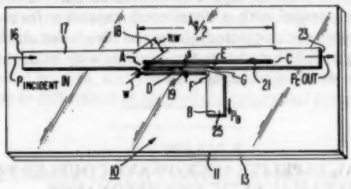
A set of circuits with a common input and several outputs, wherein the second output signal is the time derivative of the

first output signal, and the third output signal is the second time derivative of the first output signal, and wherein the



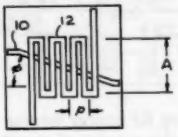
transfer functions from the input signal to each output signal have the same denominator roots.

3,742,392
SELF LOADED UNEVEN POWER DIVIDER
Alfred Schwarzmann, Mount Laurel Township, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Dec. 13, 1971, Ser. No. 207,405
Int. Cl. H01p *5/12*
U.S. Cl. 333—9 **3 Claims**



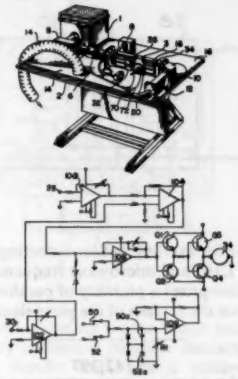
An uneven power divider in strip transmission line is provided by branching the narrow conductor into, for example, two appropriately uneven width mutually coupled narrower conductor sections with a distributed resistance therebetween.

3,742,393
DIRECTIONAL FILTER USING MEANDER LINES
Arthur Karp, Palo Alto, Calif, assignor to Stanford Research Institute, Menlo Park, Calif.
Filed Apr. 19, 1972. Ser. No. 245,526
Int. Cl. H01p *5/14, 3/08;* **H03h** *7/46*
U.S. Cl. 333—10 **8 Claims**



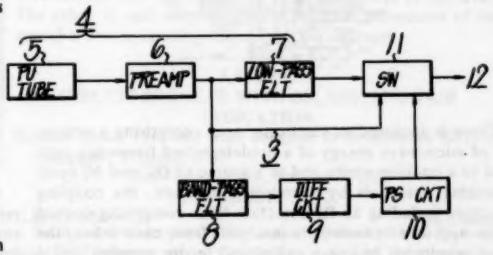
A frequency-selective directional coupler is provided which comprises a fast-wave transmission line placed in proximity to a slow-wave transmission line. The fast wave line can be a waveguide, strip-line, or microstrip line which follows a fairly direct path between two points. The slow wave line can be a helix or a meander line.

3,742,394
TUNING MEANS IN A MICROWAVE HEATING APPARATUS
Allan Leroy VanKoughnett, and Walter Wyslouzil, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Dec. 20, 1971, Ser. No. 209,518
Claims priority, application Canada, Mar. 8, 1971, 107,117
Int. Cl. H03h *7/00*
U.S. Cl. 333—17 **6 Claims**



Tuning means in a microwave heating apparatus comprises a slotted waveguide section connecting a microwave energy source to a microwave heating means, a tuning probe extending into the slotted waveguide section through the slot, a motor driven carriage slidable along the slot and mounting the tuning probe, two voltage standing wave pattern sensing probes attached to the carriage and extending into the slotted waveguide through the slot, and a control circuit connected to the sensing probes and the electric motor for tuning the apparatus by moving the tuning probe along the slot. Two further probes, which are similar to the sensing probes, may be provided together with further circuitry for indicating on a voltmeter when adjustment is necessary of the depth that the tuning probe extends into the slotted waveguide section.

3,742,395
VARIABLE BANDWIDTH APPARATUS FOR TRANSMISSION SYSTEM
Masahide Yoneyama, Kawasaki, Japan, assignor to Nippon Columbia Co., Ltd., Tokyo, Japan
Filed Oct. 15, 1971, Ser. No. 189,559
Claims priority, application Japan, Oct. 21, 1970, 45/92644; Oct. 21, 1970, 45/92645
Int. Cl. H03h *7/12*
U.S. Cl. 333—17 **4 Claims**



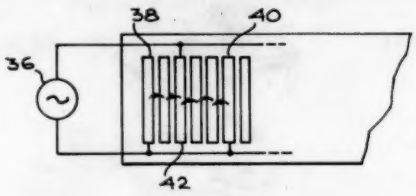
A variable bandwidth apparatus for a signal transmission system having a circuit for changing the bandwidth in response to the spectrum of a signal to be transmitted.

3,742,396

GRATING SURFACE ACOUSTIC WAVE TRANSDUCER

Alfred J. Bahr, Mountain View, and Allen F. Podell, Palo Alto, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed July 23, 1971, Ser. No. 165,655
Int. Cl. H03h 7/30, 9/02, 9/32
U.S. Cl. 333—30 4 Claims



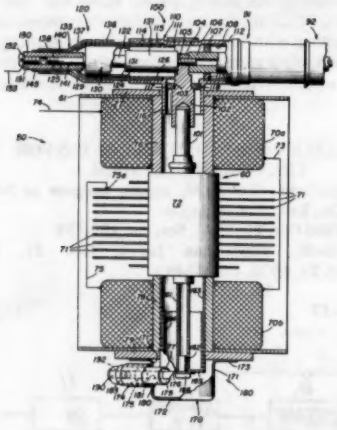
A transducer for exciting and/or detecting surface acoustic waves at both UHF and microwave frequencies in piezoelectric materials comprises a plurality of parallel spaced conductors deposited on the surface of the piezoelectric material.

3,742,397

ELECTRONIC OVEN WITH FERRITE RF REJECTION FILTERS

Louis H. Fitzmayer, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Division of Ser. No. 877,989, Nov. 19, 1969, Pat. No. 3,626,135. This application July 16, 1971, Ser. No. 163,336
Int. Cl. H03h 7/04
U.S. Cl. 333—70 S 14 Claims



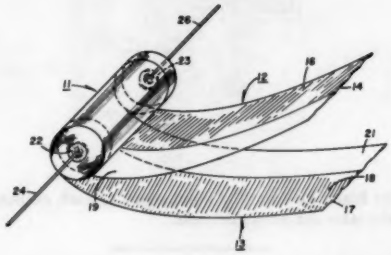
There is disclosed an electronic oven comprising a generator of microwave energy of a predetermined frequency coupled to a cooking cavity and to a source of DC and 60 cycle operating potentials by a coupling structure, the coupling structure including an RF rejection filter comprising coaxial inner and outer conductors insulated from each other, the inner conductor having a cylindrical ferrite member and a cylindrical metal slug therein of such diameter that the filter oprates as a lossy transmission line, terminated in a capacitance for highly attenuating the predetermined frequency and all harmonics thereof up to the seventh harmonic.

3,742,398

DISTRIBUTED RESISTOR-CAPACITOR NETWORK AND METHODS OF FABRICATING A DISTRIBUTED RESISTOR-CAPACITOR NETWORK

Donald R. Brown, Downers Grove, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,389
Int. Cl. H03h 7/10, 9/00
U.S. Cl. 333—70 CR 16 Claims



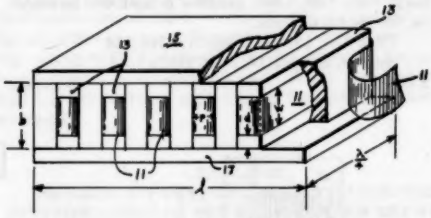
Two network forming strips are wound to form a distributed resistance-capacitance network roll, each strip being a sheet of dielectric material having a contiguous layer of metal on one side thereof. Two solder termination blocks, one at each end of the network roll, each electrically contact a convoluted length of the edge of a different one of the metal layers, the electrical contacts beginning at the same end of each of the metal layers. The metal layers so contacted form a discrete capacitor in parallel with a distributed capacitor formed by the metal layers not contacted, the metal layers not contacted also forming a distributed resistor in series with both the discrete and the distributed capacitors.

3,742,399

VERTICAL TAPELINE MICROWAVE COUPLER FOR PARAMAGNETIC SPIN RESONANCE

Owen Lewis, Syracuse, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 19, 1971, Ser. No. 144,956
Int. Cl. H01p 7/00, 7/02, 3/08
U.S. Cl. 333—82 R 4 Claims



A device for coupling RF energy for use in magnetic spin resonance which includes a series of rectangular solids constructed of paramagnetic material. An electrically conducting folded ribbon is interleaved between the rectangular solid in the longitudinal direction. The ribbon and the rectangular solids are in surface contact with each other and the rectangular solids are in surface contact with upper and lower ground planes.

3,742,400

DIFFERENTIAL RADIUS TRANSMISSION LINE LENGTH ADJUSTER

Lawrence O. Friend, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 8, 1971, Ser. No. 160,626
Int. Cl. H01p 3/00, 3/08
U.S. Cl. 333—84 M 8 Claims

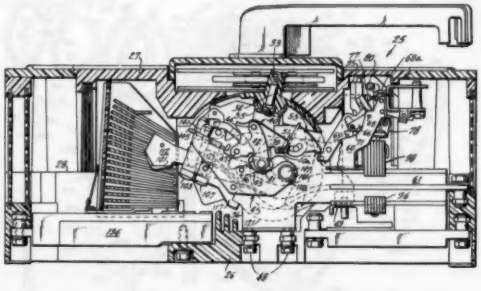
Means are disclosed for very accurately adjusting the length of a strip transmission line wherein the transmission line has two open radial ends of different radii disposed adjacent each other and a rotatable transmission line having two radial portions which overly the radial open ends to complete the circuit. The radial portions are joined by a continuously smooth transitional section, and the change in length is inversely proportional to difference in radii of the two radial portions.

3,742,401

MULTI-POLE LATCH SYSTEM HAVING MEANS TO DEFEAT SINGLE POLE LATCHING

Albert Strobel, Cherry Hill, N.J., assignor to ITE Imperial Corporation, Philadelphia, Pa.

Filed July 27, 1972, Ser. No. 275,623
Int. Cl. H01h 73/02
U.S. Cl. 335—9 8 Claims



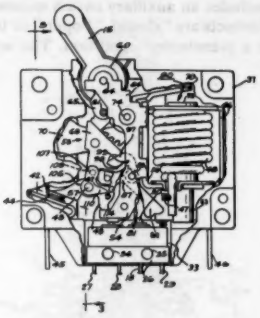
A multi-pole circuit breaker having an individual spring powered overcenter toggle operating mechanism with a releasable cradle is provided with a defeater means, independent of the cradle latches, to prevent closing of the contact mechanism until such time as the cradles of all operating mechanisms are latched.

3,742,402

CIRCUIT BREAKER WITH ON, OFF, AND TRIP INDICATION

Ronald Nicol, and Ralph B. Davis, both of Trenton, N.J., assignors to Heinemann Electric Company, Trenton, N.J.

Filed Oct. 1, 1970, Ser. No. 77,257
Int. Cl. H01h 73/12
U.S. Cl. 335—13 14 Claims



A circuit breaker including a case which houses a fixedly mounted stationary contact, a movable contact carried by a movable arm, a handle link, and a collapsible linkage mechanism coupled between the movable arm and the handle link, the linkage mechanism including a collapsible toggle assembly. A pair of unitary switches are supported within an auxiliary cavity of the case and are activated to indicate whether the circuit breaker is "on," "off" or electrically tripped "off."

The circuit breaker contacts are opened in response either to rotation of the handle link, in which event the linkage mechanism undergoes a first motion along a first path, or to the occurrence of an electrical overload, in which instance the linkage mechanism undergoes a second motion along a second path and different from said first motion.

A sensing arrangement responds to the distinct motion of the linkage mechanism when moving to the contacts "open" position due to an electrical overload. The sensing arrangement comprises an actuating lever pivotally carried by the frame of the circuit breaker and having an upper portion adjacent the linkage mechanism, the upper portion forming a U-shaped space defined by upper and lower arms, and a lower portion for engaging a switch means upon rotation. During the first motion, a driving member, secured to the toggle assembly of the linkage mechanism, freely enters the U-shaped space of the lever, but during said second motion the driving member engages the upper arm, thereby rotating the lower portion of the lever into holding engagement with one of the unitary switches. When the contacts are subsequently closed by rotating the handle link, the actuating lever is reset by abutment between the driving member and the lower arm of the lever. The other of said switches responds to the movement of the movable arm in opening and closing the contacts.

3,742,403

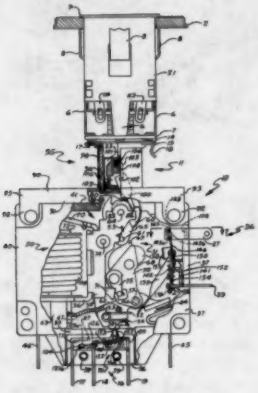
CIRCUIT BREAKER WITH ON, OFF, AND TRIP INDICATION

Ronald Nicol, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Oct. 1, 1970, Ser. No. 77,258
Int. Cl. H01h 73/12
U.S. Cl. 335—13 36 Claims

A circuit breaker including a case formed of two approximate-half-cases, a pair of contacts enclosed by the case and a collapsible linkage mechanism to move one of the contacts between contacts "closed" and "open" positions, the mechanism including a pivotal "handle" link. The circuit breaker also includes electrical means for sensing predetermined electrical conditions and collapsing said mechanism to

electrically trip "open" said contacts at such time. A unitary adapter is secured to the case and includes an actuator movable generally linearly into engagement with the pivotal "handle" link and automatically retracted back to a neutral position out of engagement with the pivotal "handle" link to operate the mechanism for moving one of the contacts to the contacts "closed" or "open" positions while permitting the pivotal "handle" link to freely move when the mechanism is collapsed on predetermined electrical conditions. The circuit breaker also includes an auxiliary switch means responsive to whether said contacts are "closed," "open" or tripped "open" in response to a preselected condition. The auxiliary switch



means includes a first unitary switch carried in an auxiliary cavity formed intermediate the half-cases and jointly supported by said half-cases. A second switch is carried by one of the half-cases and located on a margin of the circuit breaker case adjacent the collapsible linkage mechanism and responds to the distinct collapsing movement of the linkage mechanism. A push button module is secured to the unitary adapter and has a plunger engageable with the unitary adapter for actuating the latter. The push button module contains electrical lamps connected to the first and second auxiliary switches for illumination to indicate whether said contacts are "closed," "open" or tripped "open."

3,742,404

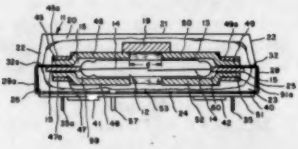
MAGNETIC LATCHING REED RELAY

Harry I. Hamilton, Jr., Frederick, Md., assignor to North American Philips Corporation, New York, N.Y.

Filed Mar. 16, 1972, Ser. No. 235,368

Int. Cl. H01h *51/22, 51/27*

U.S. Cl. 335—153 **10 Claims**



A reed relay of the multi-pole type having a magnetic latching feature. The coil for producing a flux to operate the relay is wound about an iron core which has two pair of spaced apart extended pole pieces of a substantially L shape. The plurality of reed switch capsules are accommodated in a side-by-side arrangement between the spaced pairs of pole pieces so that the coil flux is more uniformly distributed to each reed switch through the iron magnetic circuit. A permanent magnet is placed over the pole pieces so as to provide a latching feature.

3,742,405

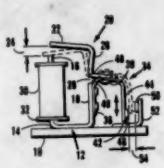
SMALL HIGH CURRENT DC RELAY STRUCTURE

Rodney Hayden, Stoney Creek, Ontario, and Dennis Herbert MacDonald, Hamilton, Ontario, both of Canada, assignors to TRW Inc., Cleveland, Ohio

Filed Aug. 2, 1970, Ser. No. 277,202

Int. Cl. H01h *50/18*

U.S. Cl. 335—187 **7 Claims**



A small high-current DC relay having a closed-loop magnetic core divided by two core gaps into a stationary and a movable core part; a spring armature pivotally connecting the core parts; and a coil mounted on the stationary core part. The armature is formed of a single strip of electrically conductive spring material and includes an anchorage end portion secured to the stationary core part, a supporting portion rigidly secured to the movable core part, an arcuate fulcrum portion connecting the supporting and anchorage portions and defining a sole fulcrum about which the movable core part can pivot through a first angle, a free contact portion at the other end of the armature and carrying a contact, and a flexible arm portion connecting the contact and supporting portions and defining a second angle of pivotal movement of the contact portion about the fulcrum, smaller than the first angle. Upon energization of the coil, the difference between the two pivotal angles will bow the flexible arm portion, wiping the contact across a co-operating stationary contact upon closing and opening of the contacts.

3,742,406

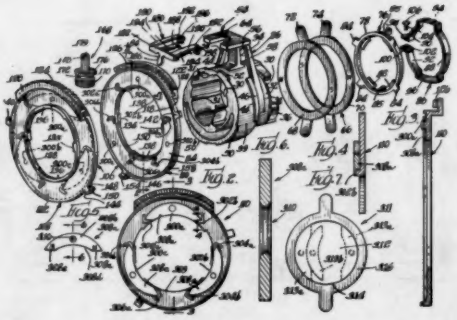
BLUE LATERAL AND PURITY MAGNET STRUCTURE

Lloyd A. Erickson, Niles, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Division of Ser. No. 883,938, Dec. 10, 1969, Pat. No. 3,646,669. This application Oct. 21, 1971, Ser. No. 191,447

Int. Cl. H01f *1/00*

U.S. Cl. 335—212 **12 Claims**

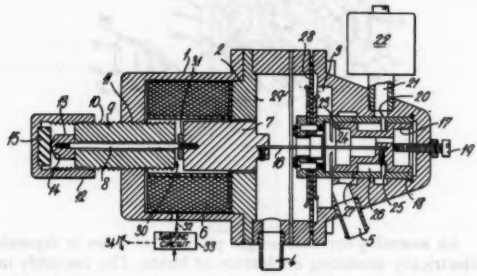


A plurality of lateral magnets and purity magnets for use in a magnetic correction device and a method for making the same. The purity magnet comprises a ring and the lateral magnets are stamped from what would normally be the scrap from the center of the ring.

3,742,407
SOLENOID DEVICE

Kenneth Hugh Frederic Cardew, Windsor, and Stuart Peter Fitzmaurice Petty, Camberley, both of England, assignors to National Research Development Corporation, London, England

Filed Oct. 6, 1971, Ser. No. 186,932
Claims priority, application Great Britain, Oct. 7, 1970, 47,598/70
Int. Cl. H01f 7/08
U.S. Cl. 335—258 3 Claims

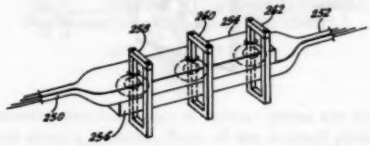


A solenoid device capable, by variation of coil current, of holding the core at positions intermediate the ends of its working range of movement. A force matching device, for example a resilient pad mounted on the coil and lying in the path of the core, opposes the approach of the core to the coil. The characteristics of this device are chosen to match the increasing electromagnetic force of attraction between coil and core as they approach and as coil current rises. The solenoid device may be used in an electromagnetic control valve in which the valve setting is required to be proportionate to the input signal.

3,742,408
INDUCTIVELY COUPLED CONNECTOR

John E. Jaeger, San Diego, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.

Filed Dec. 12, 1969, Ser. No. 884,594
Int. Cl. H01f 17/06, 40/10
U.S. Cl. 336—5 3 Claims

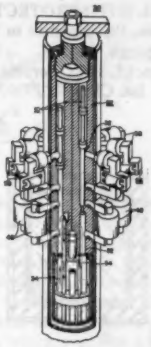


An inductively coupled connector is provided wherein a source of signals is coupled to a first potted toroid. The load for the source of signals is also coupled to a second potted toroid. The toroids are placed adjacent to each other and are interconnected using a single-turn loop. The single-turn loop has some sort of quick fastener so that the toroids may be easily connected or disconnected in an environment such as an underwater environment.

3,742,409
MAGNETIC POSITION INDICATOR

Dean C. Santis, Pittsburgh, Andre Wavre, Monroeville, and Andras I. Szabo, Export, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 27, 1970, Ser. No. 93,343
Int. Cl. H01f 21/06
U.S. Cl. 336—45 16 Claims

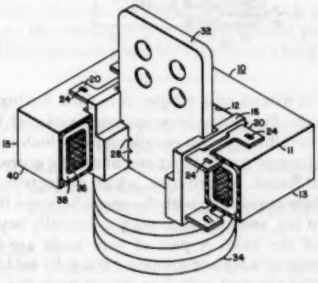


A new type of position indicator is disclosed herein for detecting the presence or absence of magnetic material which operates on the principle of either saturating or not saturating a transformer. The indicator comprises a modified E core having two magnetic flux paths with a portion thereof common to both flux paths. An AC excitation winding is wound in transformer relationship with a secondary detection winding and generates the flux in one of the magnetic paths. The flux in the second magnetic path is generated by a DC excitation winding, which provides a means of saturation control over the E transformer. The DC magnetic circuit is opened or closed by the absence or presence of the magnetic material being detected; the detection winding in the AC circuit being responsive to the corresponding change in flux.

3,742,410
ADAPTOR FOR MOUNTING CONVENTIONAL THROUGH-TYPE CURRENT TRANSFORMERS ON FLAT SPADE TERMINALS

James E. Smith, Masury, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 12, 1971, Ser. No. 188,302
Int. Cl. H01f 15/02, 27/30
U.S. Cl. 336—65 5 Claims



A grooved adaptor, two of which may be mounted by means of spring clips inside the window of a conventional through-type current transformer to permit the transformer to be

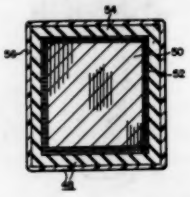
mounted on a flat spade-type terminal for current metering. The adaptors have grooves therein which are opposite to each other when the adaptors are properly positioned in the window of the transformer. The grooves receive opposite edges of the flat spade terminal. The grooves have flexible ribs or teeth extending thereinto which may be removed to permit the grooves to receive spade-terminals of different thicknesses.

3,742,411

CORE AND COIL WITH PROTECTIVE COVERING

Robert J. Hill, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 15, 1971, Ser. No. 189,620
Int. Cl. H01f *27/02*
U.S. Cl. 336—96 **4 Claims**



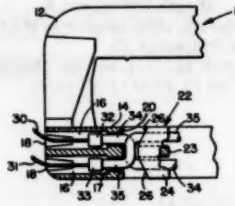
Current-type instrument transformer adaptable for placement in close proximity with oil filled apparatus. The insulation of the current transformer includes a layer of a butyl rubber disposed adjacent to the magnetic core and winding structure of the current transformer. A thin layer of a polyurethane-based material is disposed over the rubber insulation to protect it from transformer oil and other elements which are chemically destructive to the rubber insulation layer.

3,742,412

ELECTRIC COIL WITH LEAD LOCKING MEANS

Bryan L. Lakin, Springfield, Mo., assignor to Fasco Industries, Inc., Rochester, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,172
Int. Cl. H01f *15/10*
U.S. Cl. 336—192 **8 Claims**



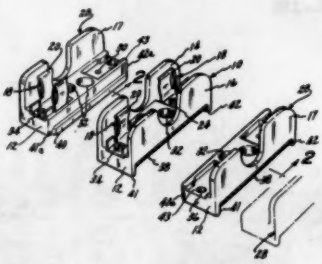
A wire coil is wound on a tubular core form having rectangular end flanges. Projecting from one corner of each flange is a lug having therethrough two parallel bores which open on a plane surface formed on the inner end of the lug normal to the associated end flange. A cord lock, which projects from each flange, has a base registering with the space between the bores in the adjacent lug, and a head projecting laterally beyond opposite sides of the base. A pair of wire leads are inserted through the bores of a lug and connected (e.g. by soldering) to opposite ends of the coil, are then drawn back through the bores until the coil and lead wire junctures are housed in these bores, and then are crossed one over the top of the other in the space between this lug and the adjacent cord lock, and are forced beneath the head on the cord lock to secure the junctures against any external strain applied to the leads.

3,742,413

SECTIONAL ASSEMBLY OF INSULATING ENCLOSURES FOR FUSES

Philip W. Taylor, Howell, Mich., assignor to Taylor Industries, Inc., Howell, Mich.

Filed Jan. 17, 1972, Ser. No. 218,298
Int. Cl. H01h *85/02*
U.S. Cl. 337—201 **7 Claims**



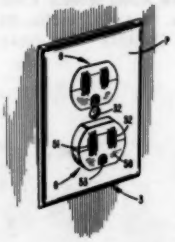
An assembly for enclosing a plurality of fuses in separate electrically insulating enclosures or boxes. The assembly includes a first double-sided insulating enclosure with provision at each side of a groove arrangement for receiving additional one-sided enclosures to provide a complete electrical insulation for the fuses, one from the other. Each additional one-sided or L-shaped enclosure further includes provision for attaching to it still further like enclosures to provide a final relatively rigid insulating assembly.

3,742,414

ELECTRICAL WIRING SYSTEM AND EJECTABLE DEVICE THEREIN

Alvin S. Gittin, 1900 South Eads St., Arlington, Va., and Ralph E. McDonald, 11717 Larry Road, Fairfax, Va., assignor to said Gittin by said McDonald

Continuation-in-part of Ser. No. 867,024, Oct. 16, 1969, Pat. No. 3,612,953. This application June 25, 1971, Ser. No. 156,616
Int. Cl. H01h *85/30*
U.S. Cl. 337—206 **18 Claims**

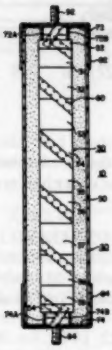


Electrical devices such as outlet receptacles and switches provided with built-in safety-fuse elements which are adapted to be inserted into housings forming part of a wiring system network, particularly in multi-story buildings, embodying feed wires extending vertically through the several stories of the buildings, without need for conventional panel boards. Each of the devices incorporates its own circuit breaker upon the occurrence of an electrical fault in the wiring or in the unit connected thereto, at which time the device is ejected, at least partially, from its housing to indicate the location of the fault, and the point of interruption of the electrical service in the system which is protected thereby.

3,742,415
CURRENT LIMITING FUSE

Frank L. Cameron, Irwin, and Harold L. Miller, West Elizabeth, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1971, Ser. No. 185,201
Int. Cl. H01h 85/44
U.S. Cl. 337—279 10 Claims

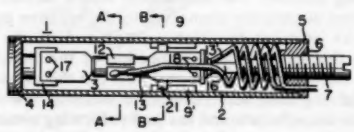


A current limiting fuse structure comprising a generally tubular electrically insulating casing having terminal means disposed adjacent to the opposite ends thereof. One or more fusible elements or links is connected between the terminal means. An electrically insulating support member on which each fusible element is disposed is positioned within the associated casing and extends axially between the respective terminal means. At least the axially intermediate portion of the support member is formed from a material which evolves one or more gases which assist or aid in arc extinction in the presence of the arc which results when an associated fusible element melts. The last-mentioned material is also electrically non-tracking in the presence of an arc.

3,742,416
THERMOSTAT

Kenshi Kondo, No. 6-3 Seta-machi, Tamagawa, Setagaya-ku, Tokyo, Japan

Filed Sept. 28, 1971, Ser. No. 184,428
Int. Cl. H01h 37/12
U.S. Cl. 337—392 1 Claim

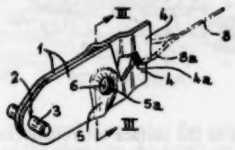


A thermostat wherein a pair of contact plates are inserted into a heat sensing cylinder. Ends of the contact plates are fixed at an end of the heat sensing cylinder and the other ends engage a contact plate tension member extending from the other end of the heat sensing cylinder. Due to difference in the heat expansion of the heat sensing cylinder and the contact plates caused from variation of temperature, the contact plates open or close the contact point. Setting of the temperature is accomplished by movement of the tension member by the use of a screw member. Means are provided for removing the backlash present in the screw members, whereby the thermostat is activated to operate accurately in conformity with the present temperature.

3,742,417
THERMAL TRIPPING DEVICES FOR SAFETY INSTALLATIONS AND THE LIKE

Jacques Snipeliski, La Tronche, France, assignor to Cotherm S.A., La Tronche (Isere), France

Filed Dec. 13, 1971, Ser. No. 207,299
Claims priority, application France, Mar. 2, 1971, 7107584
Int. Cl. H01h 37/76
U.S. Cl. 337—401 4 Claims

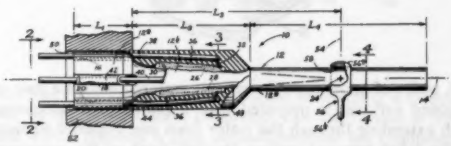


A thermal tripping device for fire protection installations in which an alarm, valve or other appliance is operated by release of a spring biased rod having at one end an eye normally held between two oppositely facing and overlapping hooked or nose shaped parts each formed on an end of two superimposed plate-like arms mounted at their other ends on a common pivot. Each arm has a concave part facing the other to define a free space which contains a bulb which explodes above a predetermined temperature to allow the arms to pivot open and release the rod, but while in an intact state the bulb holds the arms locked together.

3,742,418
ELECTROMECHANICAL DEFLECTION SENSING DEVICE

George J. J. Randolph, Jr., 1505 177th Avenue N.E., Bellevue, Wash.

Filed Aug. 3, 1970, Ser. No. 60,526
Int. Cl. G01l 1/22
U.S. Cl. 338—5 4 Claims



A sensing device including an elongated beam having an outer surface of revolution and including a generally conical medial portion whose sides taper toward a point disposed on the beam's longitudinal axis and located within an adjacent end portion in the beam. An elongated ceramic-encapsulated piezoresistive element is bonded through such encapsulating material to the outside of the beam's medial portion, and is disposed in a common plane with the beam's longitudinal axis.

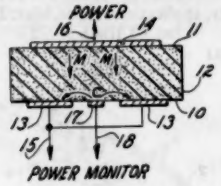
3,742,419
INTEGRAL SENSOR FOR MONITORING A METAL OXIDE VARISTOR

Francois D. Martzloff, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,184
Int. Cl. H01c 7/10
U.S. Cl. 338—20 13 Claims

A body of sintered metal oxide material having first and second opposed surfaces and a third surface disposed therebetween has first and second electrodes in contact with the first two opposed surfaces for establishing a main conductive path through the device and a third electrode in contact with one of the two opposed surfaces and spaced very close to

the corresponding electrode for establishing a monitoring conductive path for sensing the operating temperature of the body as a function of the resistance thereof. The monitoring path may also be established by a pair of third electrodes positioned



on opposite sides of the surface interconnecting the first two surfaces whereby the monitoring path intersects the main conductive path. The sintered metal oxide material has varistor characteristics.

3,742,420

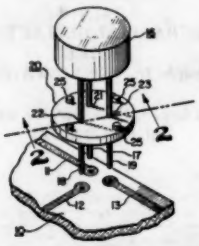
PROTECTIVE ELECTRICAL FEED-THROUGH ASSEMBLIES FOR ENCLOSURES FOR ELECTRICAL DEVICES

John D. Harnden, Jr., 1078 Parkwood Boulevard, Schenectady, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,167

Int. Cl. H01c 7/12

U.S. Cl. 338—21 **4 Claims**



A wafer of metallic oxide varistor material having a pair of opposed surfaces is provided with a plurality of apertures, each extending through the wafer from one opposed surface to the other opposed surface thereof. Each of the apertures are adapted to receive a respective conductive electrode of an electrical device and provide conductive contact between each of the electrodes and the wafer. The material has an alpha in excess of 10 when the current is of the current density range of 10^{-3} to 10^{2} amperes per square centimeter. The proportions of the apertures of the wafer in contact with the electrodes are spaced to provide a current flow between a pair of electrodes which is low when normal operating voltages appear across the pair of electrodes and when voltages in excess of the normal voltage appear across the electrodes a rapidly decreasing impedance is presented by the wafer in accordance with the alpha of the material of the wafer thereby limiting the voltage across the electrodes.

3,742,421

POTENTIOMETER HAVING A TRANSPORT SCREW AND DIAMOND SHAPED CONTACT SPRING

Jan Van Rooijen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

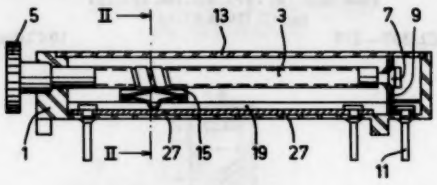
Filed Oct. 18, 1971, Ser. No. 190,057

Claims priority, application Netherlands, Oct. 20, 1970, 7015318

Int. Cl. H01c 9/02

U.S. Cl. 338—180 **4 Claims**

A potentiometer having a slide, comprising a diamond-shaped contact spring, which is rectilinearly displaceable by means of a transport screw spindle, one half of said contact



spring cooperating with the screw spindle as a nut and pressing the slide onto a guide, the other half serving as a wiper.

3,742,422

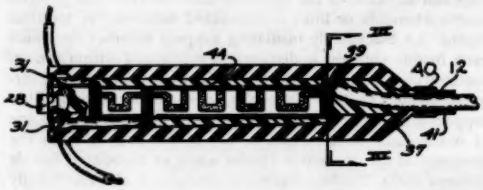
HIGH VOLTAGE RESISTOR

Arthur L. Rozema; Carlton M. Osburn, and John D. Van Benthuysen, all of Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Nov. 22, 1971, Ser. No. 200,765

Int. Cl. H01c 1/14

U.S. Cl. 338—257 **23 Claims**



A high voltage electrical resistor comprises a resistive path supported on a dielectric hollow cylindrical substrate, termination means electrically connected to the resistive path, an insulation system and a heat dissipation system. The high voltage end of the substrate is spaced from the wall of an insulative jacket by means of projections extending radially inwardly from the wall. The low voltage end of the substrate is spaced from the wall of the jacket by means of a heat dissipating mounting member. The termination means include insulated lead wires electrically connected to the resistive path with a lead wire adjacent the high voltage end of the substrate passing through a tubular projection of the jacket. A heat shrunk sleeve forms a tight seal between the tubular projection and the lead wire. Dielectric material fills the space between the substrate and the jacket forming a moisture impervious barrier around the resistive path and improving the dielectric strength of the resistor.

3,742,423

ELECTRICAL RESISTOR

George F. Chadwick, North Tonawanda, N.Y., assignor to Airco, Inc., New York, N.Y.

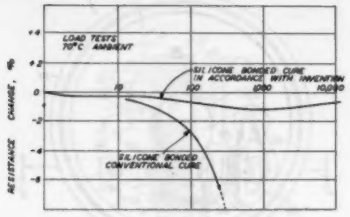
Division of Ser. No. 690,897, Dec. 15, 1967, abandoned, which is a continuation-in-part of Ser. No. 410,091, Nov. 10, 1964, Pat. No. 3,382,574. This application July 13, 1970, Ser. No. 61,045

Int. Cl. H01c 13/00

U.S. Cl. 338—334 **1 Claim**

A carbon composition resistor and method for manufacture thereof is disclosed, the resistor being characterized as having

a body comprising a conductive particulate component, a nonconductive particulate component, and a silicone resin



binder for said components, said binder being advanced and cross-linked entirely in situ in the body.

3,742,424

ELECTRICAL CONNECTOR ASSEMBLY

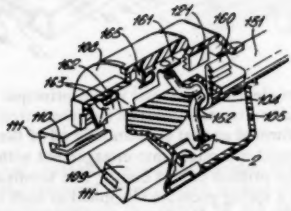
Kenneth John Startin, Hemel Hempstead, Hertfordshire, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 21, 1972, Ser. No. 236,722

Claims priority, application Great Britain, Apr. 15, 1971, 9,558/71

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 P **1 Claim**



An electrical connector assembly comprising first and second releasably matable electrical connectors, each electrical connector including a housing of electrically insulating material and a contact of electrically conductive material.

3,742,425

COAXIAL CABLE CONNECTOR FOR CIRCUIT BOARD

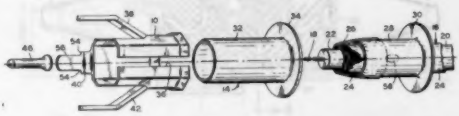
Ronald W. Peltola, Beaverton, and Richard F. Guarnero, Lake Oswego, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 7, 1970, Ser. No. 95,627

Int. Cl. H01r *17/18*; **H05k** *1/10*

U.S. Cl. 339—17 R **10 Claims**

Connector apparatus for connecting a coaxial cable to a strip transmission line on an etched circuit board is described including a resilient socket member mounted on the circuit board and a plug member attached to the end of the cable. The plug includes a tubular inner eyelet crimped onto the jacket of the cable and surrounded by an outer eyelet which clamps a portion of the outer conductor of the cable between such two eyelets by an interference fit. One end of the inner conductor of the coaxial cable extends out of the eyelets and is inserted into a hole in the circuit board which may contain a separate tubular inner socket member for connection to the signal conductor of the strip line. An outer socket member in the form of a split sleeve having a plurality of legs attached to the circuit board is connected to the ground conductor of the strip line and resiliently holds the plug member inserted therein.



3,742,426

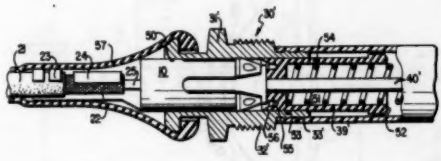
FIRE RESISTANT PLUGGABLE CONTACT AND RECEPTACLE

John Henry Huber, Harrisburg, and Robert Volinskie, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 20, 1971, Ser. No. 145,371

Int. Cl. H01r *11/08*, *13/54*

U.S. Cl. 339—45 R **1 Claim**



An electrical connector adapted for connecting a coaxial cable to the firing system of aircraft-carried rockets is provided which features a plug contact member for crimpingly engaging a coaxial cable, a receptacle having a substantially tubular shell threadably engageable with an aircraft housing, a cap member at one end to be positioned inside the housing, a non-conductive member movably disposed in the shell for preventing rocket exhaust flow into the receptacle, a spring disposed between the non-conductive member and the cap member and an elongate contact pin extending axially through the cap member and the non-conductive member to engage the coaxial cable center conductor upon insertion of the plug contact member into the receptacle, and means for normally securing the plug contact member within the receptacle.

3,742,427

SEALABLE ELECTRICAL CONNECTOR

Albert S. Ballard, 3962 Broadlawn, San Diego, Calif.

Filed Aug. 26, 1971, Ser. No. 175,119

Int. Cl. H01r *13/54*, *11/02*

U.S. Cl. 339—60 M **14 Claims**

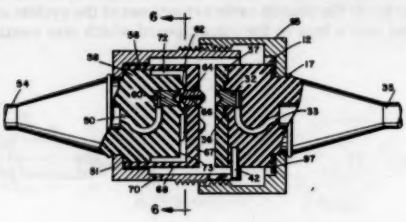
A re-usable, sealable, electrical connector for making an electrical connection in adverse environments, which electrical connection is made by drawing two bodies of relatively hard, insulating material together with electrical conducting tips projecting through layers of resilient and less hard material that is positioned between the body surfaces. The body surfaces have rings projecting therefrom that encircle the con-

ducting tips and project into the softer layer. The softer layer has less thickness and thus an increased pressure gradient immediately around the conducting tips that forces fluid out of this area forming a sealed surface around the electrical conducting tips.

3,742,428
BULB HOLDERS

Walter Howard Rathband, Burntwood, near Walsall, England, assignor to Butlers Limited, Birmingham, England

Filed Aug. 25, 1971, Ser. No. 174,768
Claims priority, application Great Britain, Aug. 25, 1970, 40,861/70
Int. Cl. H01r *13/54*; G03b *15/02*; F21v *17/00*
U.S. Cl. 339—75 R **6 Claims**

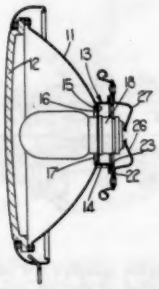


A bulbholder for an electric lamp includes a hollow conductive sleeve which is secured to the lamp reflector, and which is provided with a bulb engaging surface defined by an internal shoulder. The fulcrum part is provided at one end of the sleeve, and at the same end of the sleeve diametrically opposite the fulcrum part there is provided a latch part. The latch part is in the form of a gate terminal and an insulating contact plate carrying resilient contact member is pivotally engaged with the fulcrum part. The plate carrying the contact member can be pivoted to a position wherein the contact member is stressed against the terminal of a bulb and urges the bulb into engagement with the bulb engaging surface of the sleeve, and the plate can be retained in the operative position by a latch member in the form of a connector which engages the latch part defined by the blade terminal.

3,742,429
LAMP MOUNTING WITH SCARFING DEVICE

Charles R. Morrison, Frewsburg, N.Y., assignor to Truck-Lite Company, Inc., Jamestown, N.Y.

Filed Aug. 20, 1971, Ser. No. 173,585
Int. Cl. H01v *9/06*
U.S. Cl. 339—97 L **9 Claims**

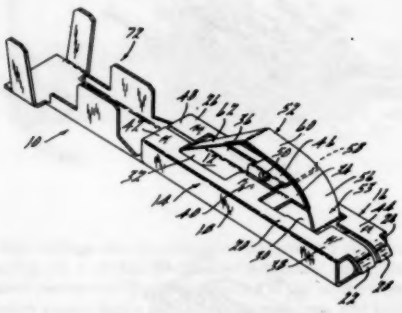


The reflector mounting member of a lamp is provided with a receptacle for the base of a bulb having its terminal in contact with an arm extending from a connector clip seated in another receptacle on the mounting member. A hot line conductor is inserted into the clip which slices the insulation sheathing of the conductor to establish an electrical connection to the bulb terminal.

3,742,430
ELECTRICAL TERMINAL

Thomas M. Cairns, Detroit, and Robert D. Kennedy, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 24, 1972, Ser. No. 228,878
Int. Cl. H01r *13/06*
U.S. Cl. 339—252 R **12 Claims**



Disclosed is an electrical terminal whose principal use is in connecting a lead to a terminal area on a printed circuit board. The terminal is formed so that substantially all of the contact area on the terminal is brought into engagement with the terminal area on the printed circuit board. The terminal is also designed so that a spring pressure is applied at both the front and the rear of the terminal's contact area so that this area is constantly biased against the circuit board's terminal area thereby assuring an electrical junction between the two areas capable of carrying a substantial current load.

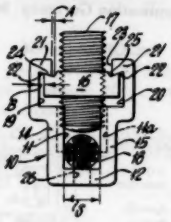
3,742,431
WIRE CONNECTOR

Herman H. Kobyner, Forest Hills, N.Y., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed July 23, 1971, Ser. No. 165,496
Int. Cl. H01r *11/10*
U.S. Cl. 339—272 VC **9 Claims**

The invention contemplates a so-called lay-in wire connector wherein a clamp nut is retained by spaced arms of a U-shaped body, adapted to receive an electrical conductor at the bottom of the U-shape. The nut carries a clamp screw and is longitudinally guided by and retained between the spaced arms. Interengaging parallel concave and convex V-formations on overlapping surfaces of the nut and arms (a) assure

against arm-spreading when the clamp is applied to the conductor, and (b) assure against such clamped permanent deformation of the arms as might otherwise interfere with later removal and reassembly of the same nut and screw, as when changing the conductor in a re-wiring operation.

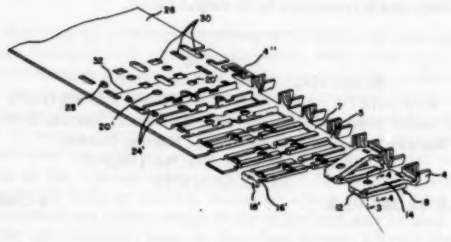


3,742,432

ELECTRICAL TERMINAL HAVING FOLDED BLADE AND METHOD OF MANUFACTURING SAME

Charles Robert Curtis, "La Hacienda", Atizapan de Lopez Mateos, Mexico, and John Theodore Lawrence, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 24, 1972, Ser. No. 247,034
Int. Cl. H01r 5/00, 11/08
U.S. Cl. 339—276 T 3 Claims



Electrical contact terminal has a folded blade type contact portion, the marginal edges of each section of the blade being bent inwardly towards the center of the blade and tucked between the two sections of the blade to provide rigidity and strength for the full length of the blade.

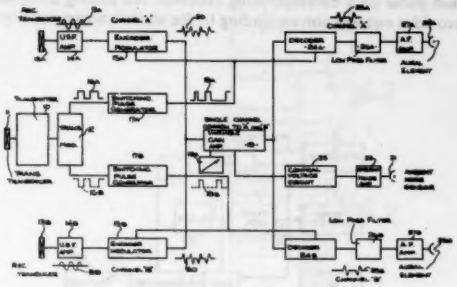
3,742,433

DETECTION APPARATUS

Leslie Kay, Brighton, Mass., and Graeme Leslie James, Christchurch, New Zealand, assignors to National Research Development Corporation, London, England

Filed June 18, 1971, Ser. No. 154,476
Int. Cl. G01s 9/68
U.S. Cl. 340—1 R 4 Claims

An apparatus for detecting and providing positional information as to an object in a field of view primarily for aiding blind persons comprising a frequency swept transmitting transducer and two receiving channels receiving reflected frequency swept incoming signals sampled in the channels respectively by encoders fed with time staggered switching pulses to generate a multiplex signal fed to a single variable gain amplifier, the output of which is decoded in the later portions of the two receiving channels to develop audio signals derived from the incoming signals received by the receiving transducers, the amplifier having a gain control circuit responsive to the output of an ambient noise sensor.

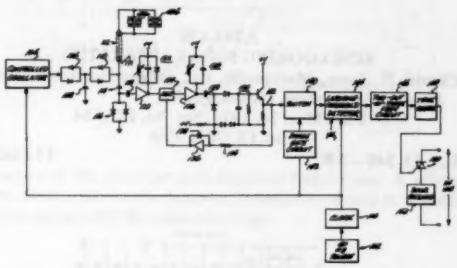


3,742,434

AUTOMATIC DOOR-OPENING SYSTEM USING AN ACOUSTIC OBJECT DETECTION SYSTEM

Warren L. Leyde, and Delbert E. Marker, both of Seattle, Wash., assignors to Republic Industries, Inc., Chicago, Ill.

Filed Sept. 30, 1971, Ser. No. 185,073
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R 7 Claims



An object detection system is disclosed which makes use of an acoustic transducer for generating compressional waves in the air and detecting return pulses from an object lying within the detection zone. A transducer mounting system includes a transducer slug mounted for generating acoustic waves from both ends of the slug. The antenna system includes a reflector housing adapted to accommodate variable surfaces for controlling the energy pattern. Details of the electronic circuitry associated with the transducer mounting system and a door opening system are disclosed.

3,742,435

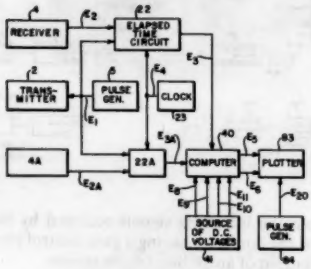
FATHOMETER MEANS AND METHOD

Keh Pann, and Steven A. Stubblefield, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 3, 1971, Ser. No. 149,595
Int. Cl. G01s 9/68
U.S. Cl. 340—3 R 7 Claims

A fathometer, for measuring the depth in water to a sloping bottom surface, includes a transmitter, periodically providing pulses in the water, and at least a pair of receivers arranged in a predetermined manner with the transmitter. Each receiver receives reflection pulses of the transmitted pulses from the sloping surface. Synchronizing pulses coinciding with the transmitted pulse and outputs from corresponding receivers

control elapsed time circuits to provide signals corresponding to time intervals. Each time interval starts with the transmission of a pulse by the transmitter and the reception of a reflection pulse by a corresponding receiver. An analog computer provides outputs corresponding to the water's measured depth



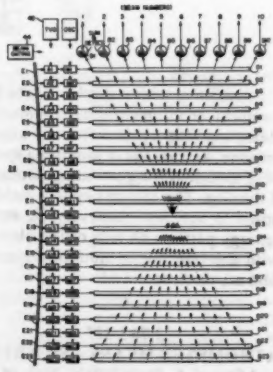
and to the location of the depth measurement in accordance with the time interval signals and the known predetermined arrangement of the transmitter and the receivers. A recorder provides a record of the depth measurement and its proper location in accordance with the outputs from the analog computer.

3,742,436

SIDE LOOKING SONAR APPARATUS

Charles H. Jones, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1971, Ser. No. 127,654
Int. Cl. G01s 9/66
U.S. Cl. 340—3 R **12 Claims**



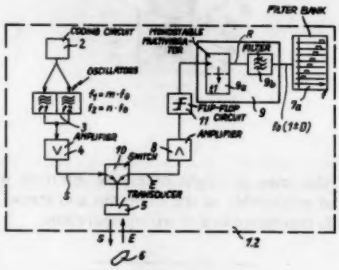
A side looking sonar transmitter projects acoustic energy to sonify a certain area on the sea bottom. A receiver apparatus forms a plurality of receiver beams for receiving reflected projected acoustic energy from a plurality of adjacent receiver strips. A display apparatus is provided for portraying signals associated with these strips. The area portrayed is made equal to or less than the area sonified and the apparatus is utilized in a linear mode or a rotating mode.

3,742,437

SIGNAL TRANSMISSION SYSTEM

Rudolf Thiele, Bremen, Germany, assignor to Fried-Krupp Gesellschaft mit Beschrankter Haftung, Essen, Germany

Filed Feb. 29, 1972, Ser. No. 230,291
Claims priority, application Germany, Mar. 26, 1971, P 21 14 675.8
Int. Cl. G01s 9/66
U.S. Cl. 340—3 D **6 Claims**



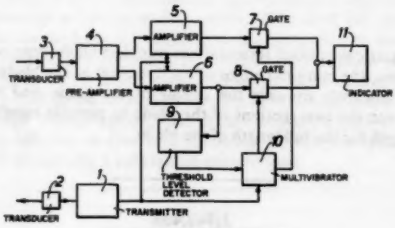
A frequency keyed signal system having a transmitter which generates and transmits coded frequency keyed signals having a sequence of intervals of identical time durations. A plurality of different frequencies are utilized, each of the frequencies being a respective whole positive number multiple of a fundamental frequency. A receiver responsive to the transmitted coded frequency keyed signals is provided. The receiver includes a frequency divider responsive to the received signals. The frequency divider has a variable dividing ratio and produces on its output an output signal of the fundamental frequency with any Doppler shift as may be present. A frequency analyzer is coupled to the output of the frequency divider and is responsive to its output signal.

3,742,438

ECHO SOUNDING APPARATUS WITH AUTOMATICALLY REGULATED RECEIVER GAIN

Raymond Brede, Borre, and Erik Stenresen, Horten, both of Norway, assignors to Simrad A.S., Horten, Norway

Filed Nov. 9, 1971, Ser. No. 196,919
Int. Cl. G01s 9/70
U.S. Cl. 340—3 R **4 Claims**



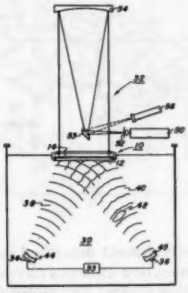
The present invention discloses an echo sounding apparatus with two receiver channels, each having individually variable receiver gain regulated in accordance with a suitable predetermined time function during each sounding period. The gain regulations of the channels are operatively adapted to compensate for the scattering and dissipation losses of the sounding signals, in order to obtain appropriate relative indications of fish echo signals and bottom echo signals, respectively; a common indication organ being switched from the channel regulated with respect to fish echoes, to the other channel

upon the reception of a bottom echo signal, and back to the former channel again upon the transmission of the next sounding pulse.

3,742,439
IMAGING SYSTEM

Nicholas K. Sheridon, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 804,539, March 5, 1969, abandoned.
This application Jan. 12, 1972, Ser. No. 217,164
Int. Cl. G01n *29/04*
U.S. Cl. 340—5 H **59 Claims**



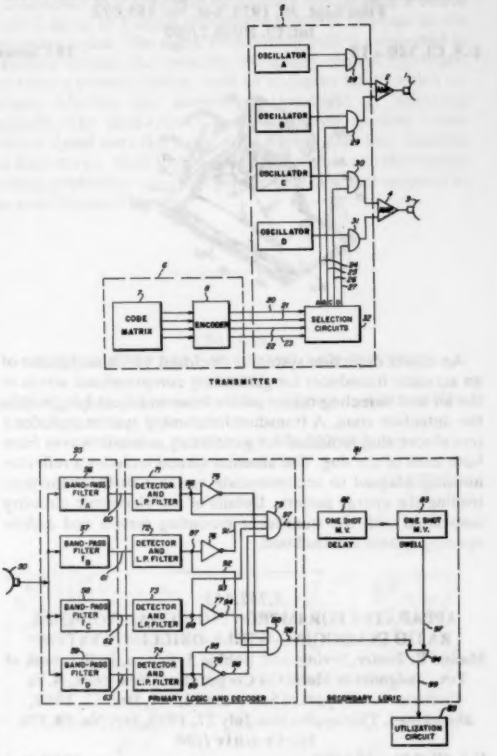
An imaging member comprising a substrate, at least partially transparent to ultrasonic radiation, with a thin layer of liquid thereon, the layer preferably of a particular preferred thickness, is used for the detection of the interference pattern resulting from the interference of two phase correlated beams of ultrasonic energy, one beam typically being a reference beam and the other an object modulated beam. The free surface of the thin liquid layer is deformed by the interference pattern to form an acoustic hologram which may be used to reconstruct an optical image of the object and may be used in other advantageous ways as described herein. Electric field techniques to amplify the ultrasonically produced pattern of deformation of the free surface of the thin liquid layer; a diverging acoustic lens and a method of making a preferred elastomeric liquid layer are also described.

3,742,440
SYSTEM FOR ACTIVATING A REMOTE UNDERWATER DEVICE

Stanley L. Ehrlich, Middletown, and Robert E. Kirkland, Barrington, both of R.I., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 871,740, Aug. 12, 1969, and a continuation of Ser. No. 679,785, Nov. 1, 1967, abandoned.
This application Nov. 1, 1971, Ser. No. 194,591
Int. Cl. H04b *1/00*
U.S. Cl. 340—5 T **9 Claims**

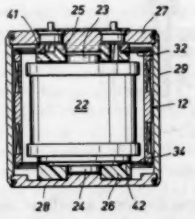
A system for activating a remote underwater device using a frequency coded acoustic wave generator having at least one notch frequency in the transmission spectrum. The generator is adapted to transmit simultaneous assertion and negation frequencies. An acoustic responsive receiver is located at the remote underwater device. The receiver includes a code validation logic arrangement responsive to each received acoustic wave for verifying the simultaneous presence and absence of the assertion and negation frequencies. A utilization circuit, also in the receiver, is responsive only to a verification signal from the validation logic.



3,742,441
SEISMOMETER

Travis E. Riley, Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.

Filed Mar. 25, 1970, Ser. No. 22,622
Int. Cl. G01v *1/16*
U.S. Cl. 340—17 **15 Claims**



The moving element of the seismometer is supported by spring spiders, the outer portions of which are stiffened by stiffening members integrally attached to the outer portions. By stiffening the outer portions of the spiders, the distortion of the output signal that was due to the transverse or radial bending of the outer portion of the springs as the springs flexed is substantially reduced.

3,742,442

ACOUSTIC OBJECT DETECTION SYSTEM

Warren L. Leyde, and Delbert E. Marker, both of Seattle, Wash., assignors to Pacific Technology, Inc., Renton, Wash.

Filed Sept. 30, 1971, Ser. No. 185,072
Int. Cl. H04b *11/00*
U.S. Cl. 340—15 **18 Claims**

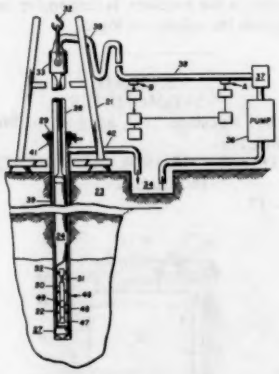
An object detection system is disclosed which makes use of an acoustic transducer for generating compressional waves in the air and detecting return pulses from an object lying within the detection zone. A transducer mounting system includes a transducer slug mounted for generating acoustic waves from both ends of the slug. The antenna system includes a reflector housing adapted to accommodate variable surfaces for controlling the energy pattern. Details of the electronic circuitry associated with the transducer mounting system and a door opening system are disclosed.

3,742,443

APPARATUS FOR IMPROVING SIGNAL-TO-NOISE RATIO IN LOGGING-WHILE-DRILLING SYSTEM

Manus R. Foster, Irving, and Bobbie J. Patton, Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 884,441, Dec. 12, 1969, abandoned. This application July 27, 1970, Ser. No. 58,378
Int. Cl. G01v *1/00*
U.S. Cl. 340—18 LD **12 Claims**



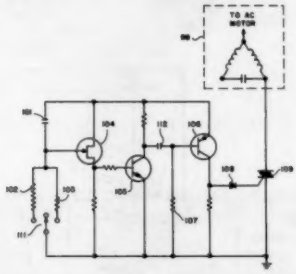
The specification discloses a method and apparatus for substantially reducing the uphole noise in a logging-while-drilling system wherein a signal representative of a downhole parameter is generated down a well and is transmitted to the surface in the form of an acoustical wave in the drilling fluid, e.g., mud. Two spaced transducers measure the acoustical pressure at two points in the mudline between the pumps and the well and convert these pressures to corresponding signals. One of these signals is time shifted an amount equal to the travel time of sound in the mud between the two transducers and, after one of these signals has had its polarity reversed, the two signals are added to reduce the uphole noise substantially. By filtering one of the pressure measurement signals with a filter having characteristics related to the distortion of the flow path between the two spaced transducers, noise is further reduced. The combined signals are further filtered with a Wiener type filter which best recovers the signal.

3,742,444

DE-SYNCHRONIZING SYSTEM

James M. Lindsey, Houston, Tex., assignor to Sperry Sun Well Surveying Company, Sugar Land, Tex.

Filed Nov. 4, 1970, Ser. No. 86,915
Int. Cl. G01v *1/40*; H02k *27/20*; H02p *5/34*
U.S. Cl. 340—18 R **12 Claims**



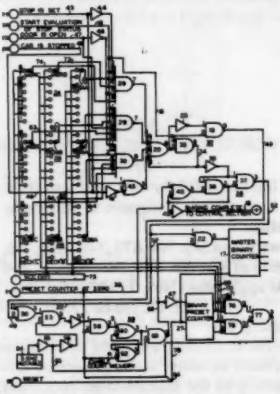
The particular embodiment described herein as illustrative of one form of the invention utilizes a circuit for desynchronizing a first synchronous motor. The motor drives a surface indicating apparatus which displays light signals in timed relation with the downhole detection of borehole parameters. Such downhole detection is accomplished with the use of a second synchronous motor driven from the same power supply as the first synchronous motor. Desynchronization of the first motor permits the display signals to be moved with respect to a scale, and thereby be more easily interpreted by an operator.

3,742,445

ELEVATOR CAR STOPPING STATUS EVALUATION MEANS

Robert J. Lauer, Toledo, Ohio, assignor to Reliance Electric Company, Euclid, Ohio

Filed June 10, 1971, Ser. No. 151,861
Int. Cl. B66b *1/14*
U.S. Cl. 340—19 R **9 Claims**



A means of defining the anticipated delay until a stopped automatically restarted elevator car at any of a number of

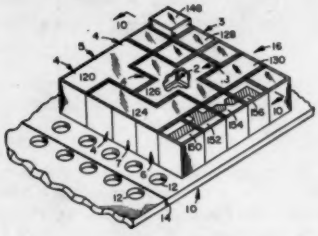
landing will again be running. Signals issued in conventional automatic elevator stopping sequences and characteristic of predetermined instances spaced in time during the stopping sequences are employed to gate portions of a pulse train to a pulse counter. The number of pulses gates is scaled to the anticipated delay so that the count in the counter is indicative of that anticipated delay either alone or combined with other factors characteristic of delays to indicate a car's availability for service.

3,742,446

MODULAR LIGHT DISPLAY PANEL

Robert R. Wells, Anaheim, and Donal O. Nelson, Orange, both of Calif., assignors to Staco-Switch, Inc., Costa Mesa, Calif.

Filed Aug. 26, 1971, Ser. No. 175,179
Int. Cl. G09f 9/40
U.S. Cl. 340—381 **12 Claims**



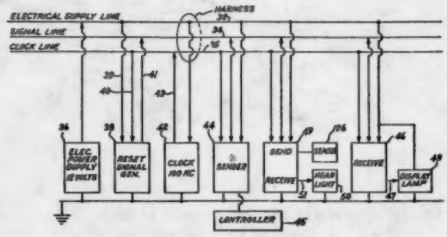
A lighting system comprising a series of lights for displaying information on a translucent panel thereover in accordance with the respective inputs to the lights. The lights are disposed to light a panel or individual segregated lenses in a series of modules or combinations of modules. The modules are formed from rectangular shells and surround the lights or combination of lights and are connected by an interlocking flange and recess or grooves for isolating light from each module or desired grouping thereof. The interlocking recesses and flanges lock the system together to prevent the transfer of light and attendant shadows from traveling to other lighting groups to provide an attendant clear, finely enunciated distinguishable display.

3,742,447

DIGITAL INDICATING AND CONTROL APPARATUS AND METHOD

Peter W. Sognefest, Glenshaw, and Bay E. Estes, III, Murrysville, both of Pa., assignors to Essex International Inc., Fort Wayne, Ind.

Filed Aug. 17, 1970, Ser. No. 64,283
Int. Cl. B60q 1/00
U.S. Cl. 340—52 F **3 Claims**



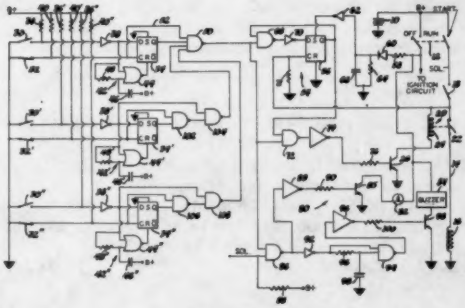
The disclosure describes an improved apparatus and methods for electrically activating a desired load device and for determining whether the desired load device is operating properly. The preferred embodiment described in the specification comprises a sensor, such as a photoelectric cell, for generating an indicating signal if the desired load device, such as an automobile headlight, is operating properly. The sensor is connected to a send-receive module that applies a coded control signal to a signal transmitting path in response to the indicating signal. The signal transmitting path is connected to a receive module that receives the coded control signal and activates a control device, such as a display lamp, which indicates whether the automobile headlight is operating properly. The send-receive module receives another coded control signal over the signal transmitting path that operates the load device. Both the send-receive module and the receive module preferably comprise binary counters that respond to the coded control signals.

3,742,448

VEHICLE SEAT BELT WARNING AND CONTROL SYSTEM

Phillip R. Motz, Milwaukee, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 2, 1972, Ser. No. 222,840
Int. Cl. B60r 21/10
U.S. Cl. 340—52 E **6 Claims**

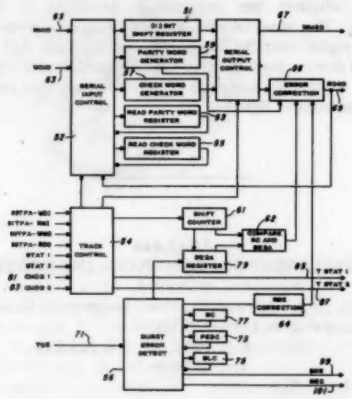


A starter control circuit including first logic means comprising a delay flip-flop and a gate connected with a seat belt in-use responsive switch and a seat occupancy responsive switch for providing a START logic level output when and only when the seat belts are in use and are placed in use subsequent to seat occupancy. Second logic means including a delay flip-flop and additional gates are provided for producing a START output which is independent of seat belt operation once a START output is initially obtained from the first logic means. Third logic means are provided for producing a START output in response to a START output from either of said first or second logic means. A starter circuit interrupt relay and control transistor responsive to the output of the third logic means is provided for controlling the starting of the vehicle. Visual and delayed audible warning means are included for providing a warning signal if the seat belts are unfastened after the vehicle has been placed in motion. Additional seat occupancy responsive switch means and seat belt in-use responsive switch means are provided for actuation by passengers of the vehicle upon seat occupancy and belt use and logic circuitry responsive to operation of these switches is connected as inputs to the gate in the first logic means and prevent starting of the vehicle if the passenger seats are occupied unless the seat belts are fastened subsequent to seat occupancy.

3,742,449
BURST AND SINGLE ERROR DETECTION AND CORRECTION SYSTEM

Charles M. Blair, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 14, 1971, Ser. No. 152,824
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL **5 Claims**

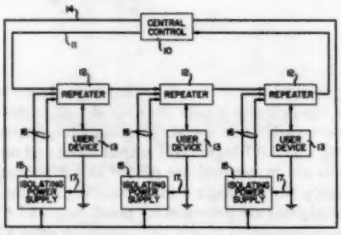


A data communication system has a source of data. The data is divided into data segments. When a burst error is indicated, the location of the burst error is determined and the burst error is corrected. After the burst error has been corrected, the data segment is checked for single bit errors.

3,742,450
ISOLATING POWER SUPPLY FOR COMMUNICATION LOOP

David Reis Weller, Bernardsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 142,628, May 12, 1971, Pat. No. 3,703,678. This application July 14, 1972, Ser. No. 271,752
Int. Cl. H04b *3/24, 3/44*
U.S. Cl. 340—147 R **2 Claims**



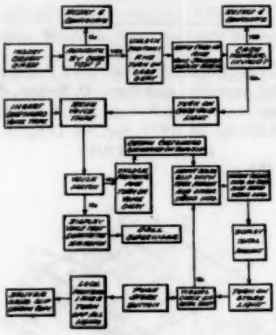
An isolating power supply having direct-current power as its input and providing a direct-current output having a ground that is independent of the input power lines.

3,742,451
CREDIT SALES SYSTEM

W. Waverly Graham, III, and John M. Jamieson, both of Atlanta, Ga., assignors to Valcometric Corporation, New York, N.Y.

Filed Apr. 13, 1971, Ser. No. 133,533
Int. Cl. H01m *1/00*; H04q *9/00*; G11b *5/00*
U.S. Cl. 340—149 A **19 Claims**

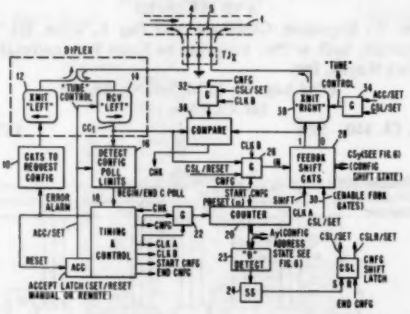
A credit method and system including a plurality of individual, separated credit stations each provided with a magnetic tape having credit information, such as the numbers of invalid cards. A central station periodically, for instance once each night, transmits, preferably by frequency modulated radio waves, updating credit information to the credit stations, which replace the information on their tape with the updating information. To check a card, it is first presented to a credit station where credit information coded in or on the card in magnetic ink or otherwise is compared with information on the tape. In addition, a voice pattern on the card can be compared with the voice pattern of the person presenting the card at the station as derived from his enunciation of a code word or phrase. If the card is accepted, the transaction is preferably manually entered into and displayed at the credit station before being stored, preferably at a plurality of locations, on another magnetic tape.



3,742,452
SELECTIVE POLLING OF TERMINALS VIA A SEQUENTIALLY COUPLED BROADBAND CABLE

Leo M. Audretsch, Jr., Poughkeepsie; Burtt E. Bliss, Hyde Park; James T. Dervan, III, Salt Point; Matthew Elsner, Poughkeepsie, all of N.Y.; Leroy E. Griffith, Boulder, Colo., and Robert A. Thorpe, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1971, Ser. No. 193,829
Int. Cl. H04j *3/02*
U.S. Cl. 340—147 R **20 Claims**



Multiple terminals linked to one broadband cable in a sequence are interrogated by directionally coupled configuring signals and service polling signals. Configuring signals are utilized to permit selectively participating terminals to order themselves into service polling groups. Service polling signals offer successive terminals in a polling group exclusive access to a facility shared by all terminals of the group (e.g. time or

frequency channel on the cable) which has not been seized by a preceding terminal of the group. Isochronal feedback shifting techniques are employed in the configuring and polling selection processes. Participating terminals progressively attach supplementary signals to the configuring and service polling signal trains "on-the-fly", without otherwise modifying or delaying the trains, by isochronally matching the signals of the passing train, extrapolating the supplementary signals and transmitting the supplementary signals immediately behind the end of the passing train through appropriate directional transmission coupling to the cable.

3,742,453

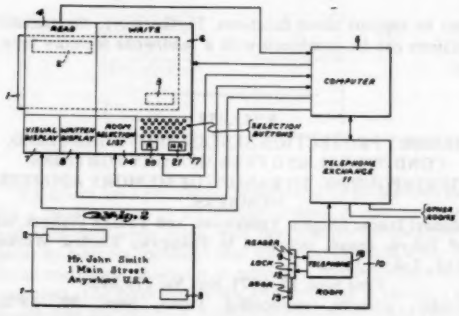
AUTOMATIC HOTEL SECURITY SYSTEM USING CODED MAGNETIC CARD

Michael C. Poylo, New York, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation-in-part of Ser. No. 71,040, Sept. 10, 1970. This application Dec. 16, 1971, Ser. No. 208,715

Int. Cl. H04q 5/16

U.S. Cl. 340—149 A **6 Claims**



This invention relates to a method and apparatus for providing an automatic registration and security system for use primarily in hotels. A person seeking accommodations possesses a magnetic card which he inserts into a card reader. A magnetic recorder reads fixed information, i.e., name, address, card number, and transmits this information to a computer. The computer generates a coded number which is temporarily assigned to a particular room number, and a magnetic recorder associated with the card reader records this coded number on a second magnetic area on the card. The room number is also displayed to the holder of the card. The card holder then proceeds to the room which he has been assigned and again inserts his card into a second card reader located at the room. The variable coded room number and a fixed room identification code are transmitted via the local telephone line to the computer where they are compared with the previously stored information. If an affirmative comparison is made, a signal is transmitted over the telephone lines which unlocks the appropriate hotel room door.

3,742,454

DATA RETRIEVAL MEANS HAVING MULTIPLE POSITION SWITCHES

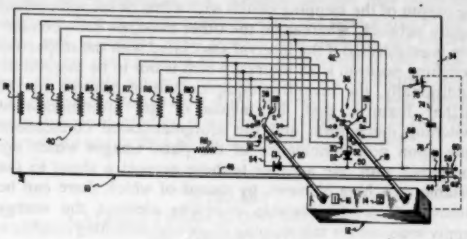
Hugh M. Baker, Jr., Washington, D.C., and Roland E. Genter, Falls Church, Va., assignors to H. B. Engineering Corporation, Silver Spring, Md.

Filed Aug. 28, 1970, Ser. No. 67,787

Int. Cl. H04q 1/30

U.S. Cl. 340—151 R **22 Claims**

A data obtaining system wherein the closed contacts of a plurality of multiple position switches are resistively read. Means are provided to distinguish between the resistive



readings obtained from different switches. The condition of a separate on-off switch is ascertained.

3,742,455

CENTRAL CONTROL RECEIVER

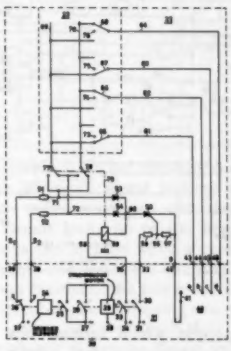
Hans Fenner, and Hanspeter Looser, both of Uster, Switzerland, assignors to Zellweger AG, Uster, Switzerland

Filed Jan. 20, 1971, Ser. No. 107,983

Claims priority, application Switzerland, Mar. 26, 1970, 4601/70

Int. Cl. H04q 9/00

U.S. Cl. 340—164 R **13 Claims**



A control receiver for selective evaluation of pulse images characterizing remote control commands. The receiver embodies a bistable switching element shifted no later than at the beginning of a received pulse image into a predetermined second condition of two possible conditions thereof, a switching mechanism associated with the aforementioned bistable switching element compares the received pulse image with at least one pulse image associated with the receiver. The bistable switching element returns to its first condition upon non-coincidence of the received and associated pulse image, whereas upon coincidence thereof and until the end of the pulse image this switching element retains its second condition, and upon interrogation causes the performance of a command. Now, according to important aspects of the present invention the aforementioned switching mechanism embodies a stepping switch, each respective switching position thereof being associated with a respective time interval of the pulse image associated with the central control receiver. Furthermore, the switching mechanism additionally possesses a command coding mechanism coupled with the outputs of the aforementioned stepping switch and with at least one current supply network of the bistable switching element. The conductor arrangement at the command coding mechanism for each of the switching positions, depending upon whether the

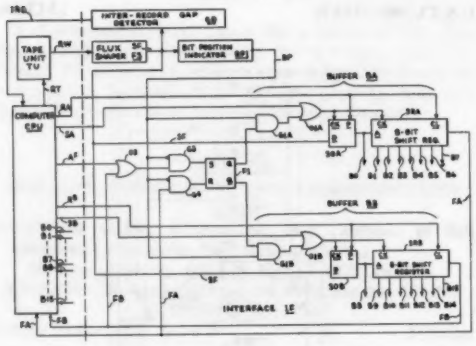
time interval associated with each such switching position of the pulse image associated with the central control receiver exhibits a pulse interval or a pulse, connects the corresponding output of the stepping switch with a first or second current supply network, whereas on the other hand, no such connection is established if the interval associated with the respective switching position is an interval which is not to be monitored. Additionally, the inventive equipment is manifested by the further features that, by means of the aforementioned switching mechanism and the aforementioned connections only upon non-coincidence of the pulse images which are compared with one another is there present a shunt to the bistable switching element, by means of which there can be removed from the bistable switching element the energy supply required for maintaining its second switching condition or state.

3,742,456

APPARATUS FOR SELECTIVELY FORMATTING SERIAL DATA BITS INTO SEPARATE DATA CHARACTERS

Robert B. McFiggans, Stamford, and Howell A. Jones, Jr., Fairfield, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Apr. 5, 1972, Ser. No. 241,265
Int. Cl. G06f *1/00*
U.S. Cl. 340—172.5 **4 Claims**



Interface apparatus which formats bits of data serially received from, for example, a data casette into preassigned groups of bits, such as, for example, alphanumerics which are transmitted in parallel to a data utilization device, such as, for example, a digital computer. The interface apparatus includes at least one shift register which is preshifted a number of positions before accepting data bits and then serially receives the data bits which are also shifted in the register. When a given total number of shifts has occurred, the contents of the shift register are transferred bits in parallel to the data utilization device.

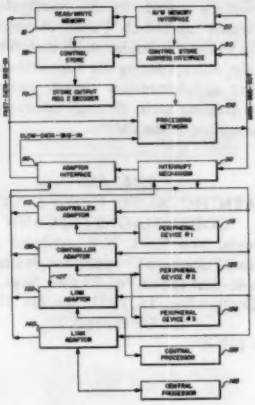
3,742,457

HIGH SPEED DATA TRANSFER FOR A PERIPHERAL CONTROLLER

Jaime Calle, Glendale; Richard Thomas Flynn, and Marion Gene Porter, both of Phoenix, all of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 15, 1972, Ser. No. 260,336
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **6 Claims**

A microprogrammable controller is provided which has the capability of transmitting and receiving data simultaneously. This effectively doubles the transmission rate as compared with alternating receiving and transmitting operations. Special features are incorporated in a microprogrammable controller, having arithmetic and logical data processing capability, in



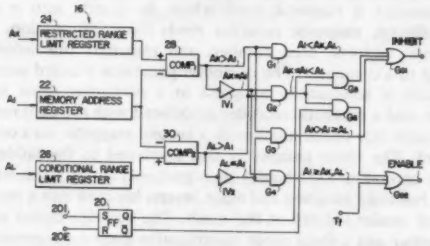
order to support these functions. Furthermore, the transfer functions can be combined with a read/write memory function.

3,742,458

MEMORY PROTECTION SYSTEM PROVIDING FIXED, CONDITIONAL AND FREE MEMORY PORTIONS CORRESPONDING TO RANGES OF MEMORY ADDRESS NUMBERS

Tadanari Inoue; Shigeru Yamamoto, and Yutaka Wakasa, all of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Sept. 10, 1971, Ser. No. 179,293
Claims priority, application Japan, Sept. 30, 1970, 45/86031
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **4 Claims**



A method and apparatus for flexible protection against overwriting and destruction of the contents of selected portions of a computer memory device formed of a multiplicity of memory units. Each memory unit is assigned a unique memory address number which serves to identify the memory unit in instructions to write data into the memory. The address numbers are segregated into ranges of numbers defining separate memory portions to be protected, with the numbers at the limits or boundaries of the ranges being entered in registers which can be reset to flexibly determine the protected ranges. The memory device is separated in this fashion into three different portions: one permitting free writing access to the memory units, one withholding all writing access to the memory units, and one being conditioned to grant or withhold writing access according to the setting of a device such as flip-flop which can be arranged for manual or programable con-

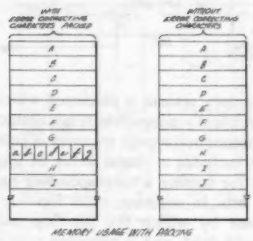
trol. Whenever an instruction to alter a memory unit arises, the associated address number is entered in a register and compared by means of digital comparators with the range boundary numbers in their registers. Gate means grant or withhold access to the memory unit in accordance with the comparison, thereby controlling the insertion of data into each memory unit and providing protection for selected portions of the memory device.

3,742,459

DATA PROCESSING METHOD AND APPARATUS ADAPTED TO SEQUENTIALLY PACK ERROR CORRECTING CHARACTERS INTO MEMORY LOCATIONS

Floyd W. Looschen, Arcadia, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 26, 1971, Ser. No. 202,342
Int. Cl. G06f *11/10*
U.S. Cl. 340—172.5 **18 Claims**



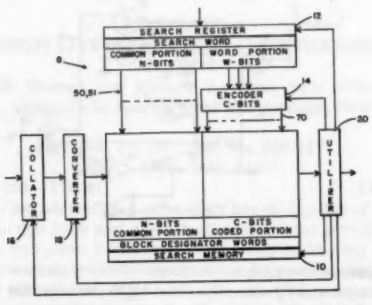
A memory has a plurality of addressable locations each having a fixed number of bit storing devices. A data processor produces data units along with raw address information to point to memory locations that will store the data units. An error correcting character is produced to accompany each data unit. The error correcting character has a shorter field length than the data unit. Apparatus responsive to the raw address information produces an actual memory address to select a location for storing each data unit. The apparatus also selects another location and a subset of the bit storing devices therein for storing the accompanying error correcting character. By selecting different subsets of bit storing devices, the apparatus operates to pack a plurality of error correcting characters together in the same location.

3,742,460

SEARCH MEMORY

Robert M. Englund, Golden Valley, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,963
Int. Cl. G11c *15/00*
U.S. Cl. 340—172.5 **4 Claims**



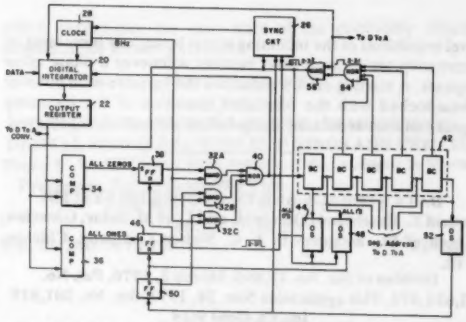
A Search memory organization using as the designator words, which words are the words that are stored in the Search memory and that are compared to the one search word held in the search register, words that are generated from blocks of data words is disclosed. Each of the (block) designator words includes two portions: a first common portion that includes the binary data that are common to all the data words of the block; and, a second word portion that includes the binary data that are not common to all the data words of the block. Thus, all the data words in each block are represented by only a single block designator word whereby only one block designator word need be searched for comparison to the one search word rather than all the data words of the block.

3,742,461

CALIBRATE LOCK-ON CIRCUIT AND DECOMMUTATOR

Donald F. Forbes, Oakton, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1972, Ser. No. 228,187
Int. Cl. H04l *7/00*
U.S. Cl. 340—172.5 **2 Claims**



The invention relates to digital circuitry for automatically upon receipt of a calibrate signal locking on to received analog data and decommutating said data for further processing. The circuit locks on to the beginning of each frame and maintains this lock on while a counter counts the segments of the frame and resets the circuitry for the receipt of a new frame upon the end of the previous frame. The digital data is comprised of 32 segments the first two of which are approximately all zeros and approximately all ones. The remainder of which are at varying digital levels between all zeros and all ones. The calibrate circuit looks for the calibrate signal, all zeros and then for all ones before allowing the data to go on for further processing in the digital to analog converter.

3,742,462

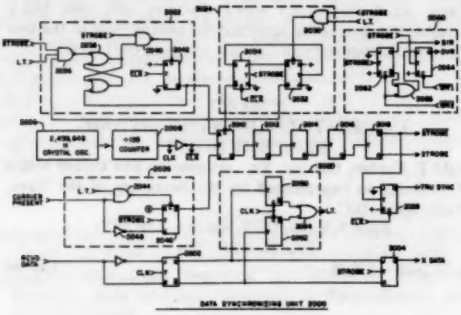
DATA SYNCHRONIZING UNIT FOR DATA TRANSMISSION SYSTEM

Donald E. Haselwood, Deerfield, and Carl M. Solar, Glenview, both of Ill., assignors to A. C. Nielsen Company, Chicago, Ill.

Division of Ser. No. 15,696, March 2, 1970, Pat. No. 3,651,471. This application Feb. 17, 1972, Ser. No. 227,143
Int. Cl. H04l *7/04*
U.S. Cl. 340—172.5 **7 Claims**

A data synchronizing unit analyzes an incoming data signal and generates a strobe signal at times when data bits may be extracted from the incoming data signal with the least chance of error. The synchronizing unit makes it possible to transmit a continuous stream of data bits from one location to another without using stop and start codes and without transmitting a stream of timing or synchronization signals along with the data bits. A variable-mod counter generates a square wave signal the leading edge of which is the desired strobe signal. A con-

stant frequency source drives the counter at a frequency which precisely equates the normal period of the counter-generated square wave signal with the time allotted to the transmission of one data bit. A digital phase detector keeps the trailing edge of the square wave signal phase-locked with



level transitions of the incoming signal by slightly increasing or decreasing the counter mod number whenever a phase error appears. A starting circuit initializes the variable-mod counter phase-locked with the first level transition of the incoming signal and thus avoids any delay before phase-lock is achieved.

3,742,463

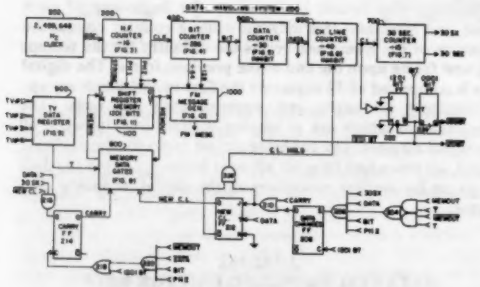
DATA STORAGE AND TRANSMISSION SYSTEM

Donald E. Haselwood, Deerfield, and Carl M. Solar, Glenview, both of Ill., assignors to A. C. Nielsen Company, Chicago, Ill.

Division of Ser. No. 15,696, March 2, 1970, Pat. No. 3,651,471. This application Nov. 24, 1971, Ser. No. 201,919

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **21 Claims**



A system for economically monitoring via telephone a large number of remotely located television receivers orthe like. Remotely located data handling systems check the status of receiver groups once every 30 seconds. Whenever a change in status is detected, the altered status is recorded as a "change line data set" in a continuously circulating memorywhich can store forty such data sets. At periodic intervals a central unit contacts the remotely located data handling systems via telephone. The data sets are then repeatedly transmitted to the central unit in the form of a frequency modulatedaudio tone. With the aid of a marker bit that reverses its sign each time the circulating memory fully circulates, the central unit is able to extract the 40 data sets from the modulated tone and is also able to check for transmission errors.

3,742,464

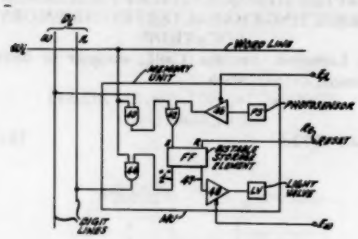
ELECTRICALLY AND OPTICALLY ACCESSIBLE MEMORY

Jan A. Rajchman, Princeton, and Walter Frank Kosonocky, Skillman, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 866,564, Oct. 15, 1969, Pat. No. 3,656,121. This application Nov. 5, 1971, Ser. No. 196,031

Int. Cl. G11c *7/00, 5/02*

U.S. Cl. 340—173 LS **4 Claims**



A computer memory system is disclosed which includes a randomly and electrically accessible semiconductor "page"-memory. The semiconductor page memory is conventional to the extent that it includes a planar array of electrically-accessible flip-flops for storing a corresponding number of binary information bits. In addition, each flip-flop is provided with a photosensor by which the flip-flop can be set in response to received light, and is provided with a light valve controlled by the state of the flip-flop. A laser light source, a light deflector and holographic optics are provided to create a hologram of the array of light valves at any one of many small areas on an erasable holographic storage medium. Subsequently, the hologram can be illuminated to recreate and project the image of the array of light valves onto the array of photosensors to return the information to the flip-flops in the semiconductor page memory. In this way, the semiconductor page memory serves as a page-at-a-time electrical input-output unit for a great many pages of information stored optically on the erasable holographic storage medium.

3,742,465

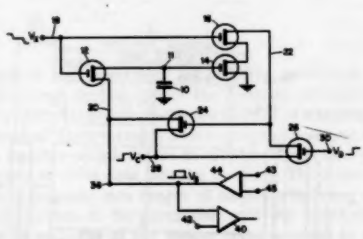
ELECTRONIC MEMORY STORAGE ELEMENT

William M. Regitz, Franklin, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 808,421, March 19, 1969, abandoned. This application Nov. 4, 1971, Ser. No. 196,305

Int. Cl. G11c *11/40, 11/24*

U.S. Cl. 340—173 CA **29 Claims**



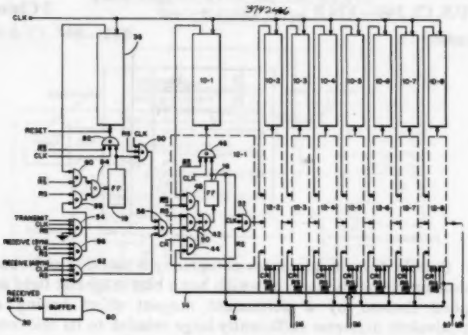
Herein is revealed an electronic memory element that employs transistors preferably of the MOS (metal oxide semiconductor) field effect type. The fundamental memory element, which is primarily for use in a random access memory array, includes three MOS field effect transistors arranged to provide

for the binary storage of data. Two additional MOS transistors stabilize the voltages on the bit lines and amplify the read signal. Also disclosed is a sense amplifier, operable during a read cycle, and a digit driver operable during a write cycle, both of which can be of conventional design.

3,742,466
MEMORY SYSTEM FOR RECEIVING AND TRANSMITTING INFORMATION OVER A PLURALITY OF COMMUNICATION LINES

Larry E. Hamm, Hudson, and Peter I. Morley, Bellingham, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 24, 1971, Ser. No. 201,746
Int. Cl. G11c *19/00*; G06f *3/04*
U.S. Cl. 340—173 RC **14 Claims**



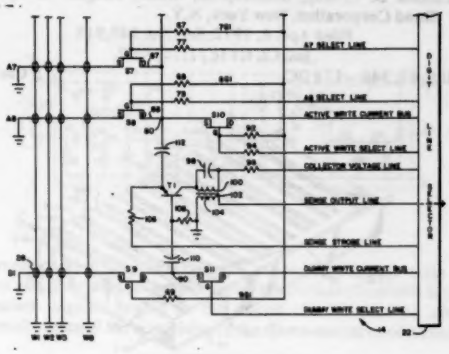
The memory system includes a plurality of circulating memories equal in number to the number of bits in a character, each circulating memory including a plurality of storage locations associated with and corresponding in number to the number of communication lines. Associated with each circulating memory is a bistable storage means coupled between the output and input of the associated circulating memory by means of enabling gates. Each of the bistable storage means is connected in shift register arrangement also by means of enabling gates. The bits of each character are circulated in the circulating memories until the communication line with which the storage locations of said memories is associated is ready for transfer of at least one bit of the character in which case, for the transmit mode, a bit of the character is serially shifted out of the shift register arrangement of bistable storage means to the line or for the receive mode into the shift register arrangement of bistable storage means from the line.

3,742,467
SENSE-DIGIT LINE SELECTION MATRIX FOR MEMORY SYSTEM

Vernal M. Benrud, and Richard L. Horst, both of St. Paul, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,147
Int. Cl. G11c *7/00, 11/14*
U.S. Cl. 340—174 RC **2 Claims**

Means for addressing a sense-digit line of a group of sense-digit lines that form part of a selection matrix for a magnetizable memory system is disclosed. The group addressing means is a matrix of eight FET transistors for gating one of eight associated active sense-digit lines and one FET transistor for gating an associated dummy sense-digit line for reading and writing. The particular design is directed to a selection system in which the associated word line drive is an AC word drive H_T for both reading and writing while the associated sense-digit line drive is a bipolar pulsed DC digit drive H_L, the polarity of

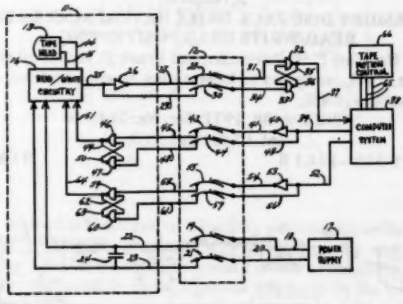


which determines the data state of the conjointly effected magnetizable memory element.

3,742,468
MEANS FOR THE RELIABLE TRANSMISSION OF DIGITAL SIGNALS ACROSS SLIP RINGS AND THE LIKE

Tenny D. Lode, Cherry Hills Village, Colo., assignor to Electric Processors, Inc., Englewood, Colo.

Filed May 3, 1972, Ser. No. 249,872
Int. Cl. G11b *5/44*
U.S. Cl. 340—174.1 B **12 Claims**

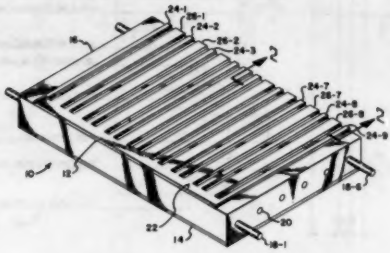


A principal application of the subject invention is in magnetic tape digital data recorders of the type in which the tape is wrapped partially around a rotating record/reproduce head assembly. Digital signals are transmitted to and from the rotating head assembly via slip rings, which may be subject to momentary contact interruptions. In one form of the subject invention, a pair of slip rings are used for each digital signal, one carrying the normal form of the signal and the other carrying the same signal in inverted polarity. A flip-flop circuit is used as a data receiving circuit. Current sinking logic circuits, of the type in which a logical 0 is transmitted by the sinking of current, are used. Data is transmitted by setting the data receiving flip-flop to one state or the other via currents transmitted through one slip ring or the other. A mementary open circuit in a slip ring connection will not erroneously alter the state of the data receiving flip-flop and, hence, not result in the transmission of incorrect data.

3,742,469
HALF-TURN WORD LINE RETURN FOR PLATED-WIRE MEMORY ARRAY

Clinton D. Crosby, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 4, 1972, Ser. No. 240,915
Int. Cl. G11c *11/14, 7/02*
U.S. Cl. 340—174 DC 3 Claims

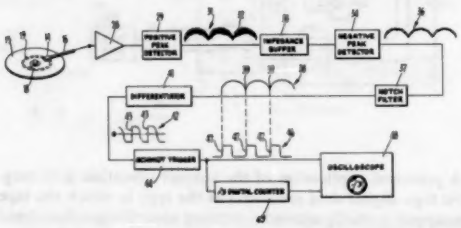


A plated-wire memory system tunnel structure and method of operation are disclosed. The tunnel structure is comprised of a planar insulative base member having a plurality of tunnel-oriented plated-wire memory elements passing therethrough. On one planar surface of the base member there is formed a comb-like copper member of alternately relatively-narrow return lines and interstitial relatively-wide word lines. In operation, the word current flows down the one selected word line, splits and returns back to ground through the parallel grounded return lines. The return current flowing back through the two return lines that are adjacent to the one selected word line provide a net word drive field that is substantially uncoupled from the next two adjacent work lines providing minimum disturb pulse effects thereon.

3,742,470
MEMORY DISC PACK DRIVE HAVING ACCURATE READ/WRITE HEAD POSITIONING

In W. Ha; Carl P. Holstein, Jr., and Frank D. Ruble, all of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertina, Calif.

Filed Dec. 30, 1971, Ser. No. 214,050
Int. Cl. G11b *21/10*
U.S. Cl. 340—174.1 B 8 Claims

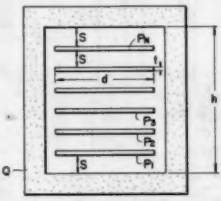


An apparatus is described which is incorporated into a memory disc pack drive mechanism to enable each read/write head thereof to be properly positioned with respect to corresponding disc pack recording surfaces. The positioning of each head is checked with the use of a test disc pack having a prerecorded data pattern at a prescribed reference location on each of its recording surfaces. The data pattern is made up of a pair of differing high frequency signals which are applied concentrically and quite close together on each surface, but eccentrically with respect to the axis of rotation of the surface. The head whose positioning is being checked is used to simultaneously pick up the pair of frequencies to generate an output signal having a repeating, closed loop tracing defining beat frequency null points and an envelope characteristic of the head alignment. The invention conditions the output signal to precisely delineate the envelope by separating such envelope from its carrier frequencies, and then differentiating the same to provide high resolution signals representative of the head positioning. The differentiated signal is shaped and adjacent portions of the resulting signal are superimposed and displayed on an oscilloscope to enable an operator to visually check the same to learn of any required adjustments to the head positioning.

3,742,471
BUBBLE DOMAIN APPARATUS

Itsuo Mikami, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1972, Ser. No. 228,899
Claims priority, application Japan, Feb. 24, 1971, 46/8648
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 S 3 Claims

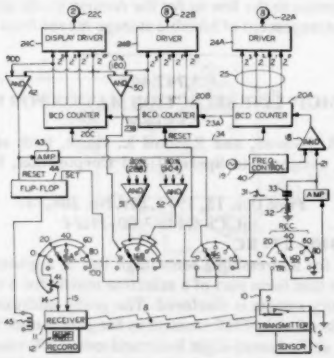


Bubble domain apparatus comprising a plurality of bubble domain elements, each of which has a bias magnetic field applied thereto by a permanent magnet sheet having an equivalent diameter sufficiently large relative to its thickness and being magnetized normally to the sheet surface, and which are received in a magnetic shielding box so that the permanent magnet sheets may be in parallel arrangement. In the bubble domain apparatus, even when one of said bubble domain elements is taken out from said apparatus, the bias magnetic fields applied to the respective bubble domain elements change scarcely.

3,742,472
ELECTRONIC TELEMETERING CALIBRATOR

John A. Bryant; Orion P. Horne, and Edwin L. Mullikin, Jr., all of Owensboro, Ky., assignors to Texas Gas Transmission Corporation, Owensboro, Ky.

Filed Dec. 27, 1971, Ser. No. 211,980
Int. Cl. G08c *19/22, 15/12*
U.S. Cl. 340—177 CA 5 Claims



A special-purpose electronic time interval instrument is described which is used to calibrate both transmitting and

receiving mechanical equipment operating at opposite ends of a telemetering link providing pulse-width modulated signals. The instrument provides a count-down of pulses from an oscillator source to establish specified time intervals for both receiver and transmitter calibration. To calibrate the telemeter transmitter, the transmitted pulse resets and gates the counter to give a counter readout indicative of the elapsed time. Control circuits provide for converting standard pulse shapes produced on telemeter links directly into counts representative of the percentage of full-scale readout transmitted. In order to calibrate the receiver, the control circuits preset the count to generate pulse intervals for various percentages of full-scale signals.

3,742,473

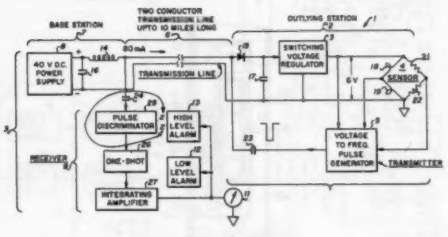
PULSE DISCRIMINATOR AND TELEMETERING SYSTEMS USING SAME

David M. Hadden, 700 Saratoga Avenue, San Jose, Calif.

Filed Aug. 12, 1970, Ser. No. 63,178

Int. Cl. G08c *19/16*

U.S. Cl. 340—210 **17 Claims**



A telemetering system is disclosed having a transmitter located at an outlying station for generating a train of pulses having a certain parameter which is a function of a quantity to be measured. The pulses are transmitted over a two wire transmission line to a receiver located at a base station. The receiver includes a pulse discriminator for discriminating both the minimum height and the minimum pulse width of the pulses to be metered by the receiver. The pulse discriminator includes a pulse generator, such as a unijunction transistor, having a storage capacitor connected across its input terminals. The capacitor is charged up through a resistor such that the time to reach the triggerable level for the pulse generator is equal to the minimum pulse width to be discriminated. The charging cycle for the capacitor is controlled through a switching transistor biased such that input pulse to be discriminated must have a certain pulse height to cause the transistor to switch current to the capacitor and the switching transistor is held "on" only so long as the pulse height exceeds the minimum level. The capacitor charging cycle is reset each time the input pulse falls below the predetermined pulse height reference level.

3,742,474

FLAME DETECTOR

Peter Muller, Oetwil a. See, Switzerland, assignor to Cerberus AG, Mannedorf, Switzerland

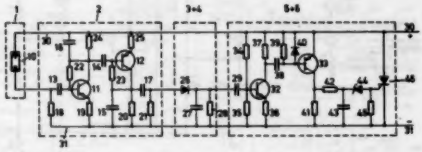
Filed Apr. 7, 1971, Ser. No. 131,898

Claims priority, application Switzerland, Mar. 4, 1971, 3248/71

Int. Cl. G08b *17/12;* **H01j** *39/00*

U.S. Cl. 340—228.2 **23 Claims**

The output from a photosensitive transducer, such as a photo diode or the like, exposed to a flame, is applied to a circuit which is capable of filtering out regularly recurring a-c components to distinguish the randomly occurring components upon flame detection from regularly recurring variations of light sensed by the transducer, for example due to reflections from rotating machines, line disturbances and the like. The circuit includes a demodulator and filter, having a pass range of about 2–40 Hz to demodulate the signal, and a further detector circuit detecting randomly recurring components within a lower frequency range, for example 1 Hz or less and providing an output signal if a certain threshold is exceeded. Signals arising in the circuit can be used to additionally control the sensitivity of the flame-sensitive detector.



3,742,475

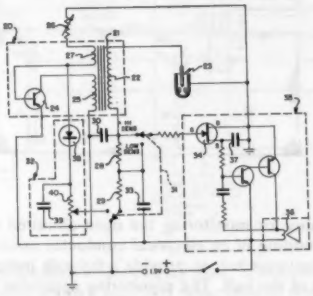
GASEOUS IMPURITY DETECTOR EMPLOYING CORONA DISCHARGE PHENOMENON

Leonard N. Liebermann, La Jolla, and Stanley H. Lai, San Diego, both of Calif., assignors to T I F Instruments, Inc., Miami, Fla.

Filed Mar. 16, 1971, Ser. No. 124,794

Int. Cl. G08b *21/00*

U.S. Cl. 340—237 R **9 Claims**



A method is disclosed of detecting gaseous impurities, particularly halogens, in an ambient atmosphere by repeatedly pulsing a pair of electrodes disposed in that atmosphere with a voltage sufficient to cause a corona discharge in the continuous corona region, and detecting the average (d.c.) current component of such discharge, changes in which correspond to changes in the concentration of such gaseous impurities. Apparatus is disclosed for detecting such impurities in concentrations as low as 1 ppm.

3,742,476

FLUID FLOW INDICATING SYSTEM

Robert B. Withrow, San Diego, Calif., assignor to Apex Supply Co. of San Diego, San Diego, Calif.

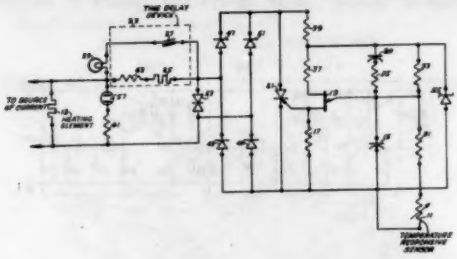
Continuation of Ser. No. 48,859, June 12, 1970, abandoned, which is a continuation of Ser. No. 797,373, Feb. 3, 1969, abandoned, which is a continuation of Ser. No. 485,155, Sept. 7, 1965, abandoned. This application Nov. 5, 1971, Ser. No. 196,237

Int. Cl. G08b *21/00*

U.S. Cl. 340—239 R **3 Claims**

A system utilizing a probe for ascertaining the rate of flow of a stably maintained fluid, i.e., a fluid which is not being subjected to a change from a liquid to a gas or vapor, or vice ver-

sa, the probe being of the type in which the temperature



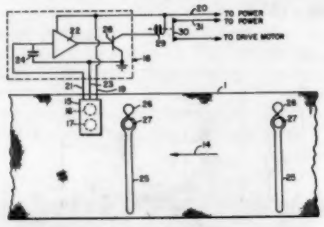
responsive sensor thereof is heated, tending to maintain the sensor at a substantially constant temperature.

3,742,477

CONVEYOR BELT CONDITION MONITORING APPARATUS

Robert S. Enabnit, Akron, Ohio, assignor to The Goodyear Tire and Rubber Company, Akron, Ohio

Filed Sept. 9, 1971, Ser. No. 178,868
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **13 Claims**



Apparatus for monitoring the open-circuited or close-circuited condition of an electrical conductor associated with a moving conveyor belt to provide a fail-safe indication of the condition of the belt. The monitoring apparatus comprises a detector circuit including an oscillator having a pair of magnetically coupled coils whose position relative to the moving conductors on the belt results in a change in the oscillator output each time a close-circuited conductor passes proximate to the pair of coils. The change effected in the oscillator signal is detected and provides a signal to an indicator circuit that is adapted to show both the safe and unsafe condition of the belt and provides shut-down of the power to the belt driving means in the event a tear or other damage occurs in the belt.

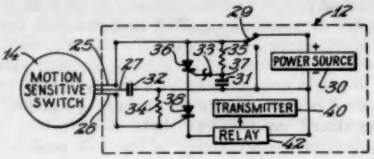
3,742,478

CIRCUIT BOARD MOTION SENSITIVE SWITCH

Robert W. Johnson, Minneapolis, Minn., assignor to Transport Security Corporation, Minneapolis, Minn.

Filed Nov. 3, 1971, Ser. No. 195,437
Int. Cl. G08b *21/00*
U.S. Cl. 340—262 R **13 Claims**

A motion sensitive switch in which a steel ball is positioned to roll freely across the surface of a printed circuit board having three separate circuits positioned thereon in a spaced relationship. If the switch is moved even slightly the steel ball rolls from circuit to circuit making and breaking connections so as to sound an alarm. In addition, a circuit is shown whereby an alarm is sounded only upon the steel ball contacting two of the circuits so as to charge a capacitor and then rolling into contact with a different pair of circuits so as to discharge the capacitor into an alarm relay. The motion sensitive switch is



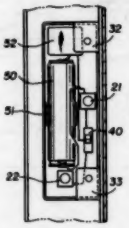
also shown in conjunction with a covering or tarpaulin designed to be draped over goods to be protected.

3,742,479

WINDOW ALARM PARTICULARLY USEFUL WITH METAL WINDOWS

George J. Williams, 10 Oak Ridge Lane, Albertson, N.Y.

Filed Oct. 18, 1971, Ser. No. 190,418
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **9 Claims**



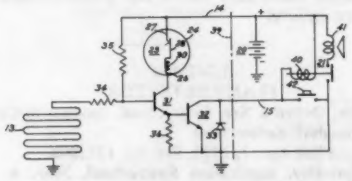
A battery operated alarm mounted within a closed housing adapted to be secured below the sill member of a metallic window by fastening means that are inaccessible when the window is closed. Switching means are provided for actuating the alarm selectively in accordance with the opened or closed condition of any one of a plurality of sash, these switching means being located in the plane of each sash and being biased to energize the alarm upon opening of the window.

3,742,480

ALARM DEVICE FOR DETECTING REMOVAL OF OR TAMPERING WITH APPLIANCES OR OTHER ARTICLES

August C. Hoecker, Broomfield, Colo., assignor to Dean Nicholson, Pittsburgh, Pa.

Filed Nov. 4, 1971, Ser. No. 195,692
Int. Cl. G08b *21/00*
U.S. Cl. 340—280 **6 Claims**



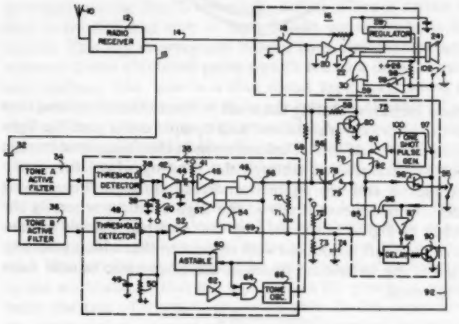
An electric alarm device for detecting removal or displacement of objects comprises a lamp of the thermostatic intermittent flashing type connected in series with a semi-conductor switch which is biased to its non-conducting position by a circuit including a wire conductor which when detached or broken removes the bias on the switch and causes the switch to conduct. A second switch arranged to be connected in series with an alarm actuating coil is biased to its off or non-con-

ducting condition when there is no current flowing through the circuit of the first switch and is turned on or triggered when the lamp is energized and thereby produces intermittent energization of the alarm actuating coil and effects intermittent operation of the alarm. The device including the lamp is encapsulated in a rigid synthetic plastic block by a method which affords protection of the lamp from breakage due to pressure during curing of the plastic.

3,742,481
SELECTIVE SIGNALLING APPARATUS WITH STORAGE OF CALL SIGNALS

Douglas W. Nickerson, North Miami Beach, Fla., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 6, 1971, Ser. No. 205,071
Int. Cl. H04m *1/02*
U.S. Cl. 340—311 R **10 Claims**



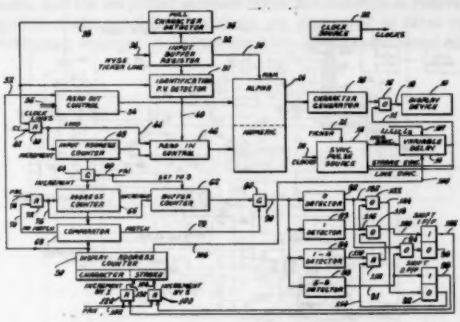
Selective calling apparatus for use in electronic equipment, such as a radio pager, for disabling an audio calling device and storing the calling information so that it can be reproduced when desired. This prevents the interruption of a person carrying the pager, such as a doctor in surgery, who does not want to be disturbed, and permits the person to receive the call at his convenience by operation of a switch. The storage or memory circuit disables the audio stage which produces the call tone and holds the signal in a decoder which responds to the code signal so that the call can be produced when the memory circuit is reset.

3,742,482
METHOD AND APPARATUS FOR GENERATING A TRAVELING DISPLAY

Francis W. Albrecht, Bridgeport; William D. Baxter, Seymour; Robert J. Duggan, and Stephen A. Grosky, both of Monroe, all of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sept. 8, 1971, Ser. No. 178,690
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 AD **18 Claims**

A method and apparatus for generating traveling display on a cyclically scanned electronic display device such as a cathode ray tube (CRT). The characters to be displayed are stored in a memory means with space being provided in the memory for a number of buffer characters waiting to be displayed. At a predetermined time in each cycle of the display a determination is made of the number of buffer characters then awaiting display. Each character is formed from a plurality of strokes. Depending on the number of buffer characters awaiting display, the display is shifted left by a selected number of character strokes for each display cycle. By varying the number of strokes that the display is advanced for each cycle in this way, the rate at which the display is moved may be varied as a function of the rate at which data to be displayed is received. The shifting by a small number of strokes for each

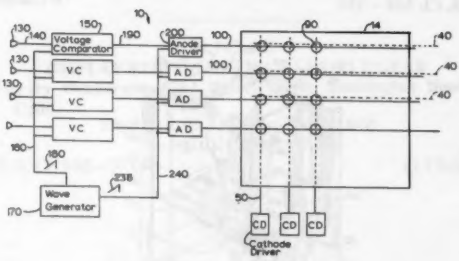


cycle provides for a smooth flow of information across the display.

3,742,483
VIDEO DISPLAY SYSTEM USING DISPLAY PANEL

James A. Ogle, Neshanic Station, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 1, 1971, Ser. No. 148,382
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 M **17 Claims**



The system operates with a display panel comprising a large number of small dot-like gas-filled cells, each of which has a drive circuit which can be energized to pass current therethrough to cause the cell to glow. The system includes means for applying both a video signal and a control signal to the driver circuit to thereby control the amplitude and time duration of the current flowing through a cell. This controls the cell brightness. Another system includes (1) a driver circuit to which a varying voltage is applied to cause a varying current to pass therethrough to a cell and (2) a voltage comparator which combines the video signal and a control signal to control the time duration of said varying voltage applied to the driver and thus the time duration of said varying current. This also controls the cell brightness.

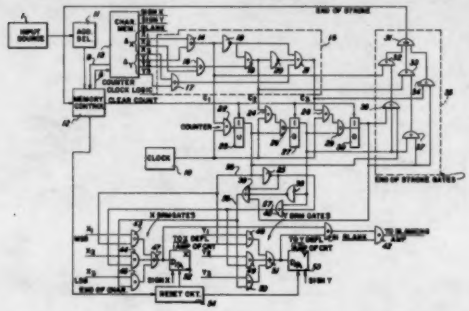
3,742,484
CHARACTER GENERATING APPARATUS EMPLOYING BIT STEAM LENGTH CORRECTION

Jerome A. Rosenthal, Brighton, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1971, Ser. No. 212,923
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **3 Claims**

Apparatus for displaying generated characters or symbols on the screen of a cathode ray tube by deflecting the electron beam in a predetermined path in accordance with signals derived from a read only character memory. Binary rate multipliers, under the control of counter logic process the signals

from the memory to provide bit streams for transmission to digital to analog converters. The bit streams are integrated in



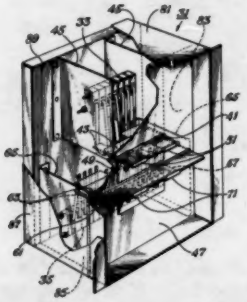
the digital to analog converters to generate strokes which are applied to the X and Y deflection amplifiers of the cathode ray tube.

3,742,485

CARD ACTUATED CONTROL SYSTEM FOR DISPLAY SIGNS

Charles R. Summers, 1808 Lexington, Bedford, Tex.

Filed July 27, 1971, Ser. No. 166,514
Int. Cl. G08b *5/36*
U.S. Cl. 340—339 **6 Claims**



A bank of electro-mechanical switches for controlling a bank of lights of a display sign for displaying a selected number. The bank of electro-mechanical switches is controlled by a card having notches formed in a selected sequence in its leading edge. By moving the card to a control position, selected ones of the switches are moved to actuate selected ones of the lights to form the selected number. The card is guided by a slot and held in place by a porch supported by the chassis box in which the bank of electro-mechanical switches is mounted. In the embodiment disclosed, two banks of switches are employed to control two banks of lights to form a selected number comprising two digits.

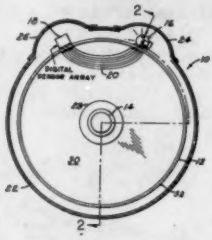
3,742,486

ANALOG TO DIGITAL CONVERTER

Charles L. Skidmore, 1152 Nottingham Road, Grosse Pointe Park, Mich.

Filed Feb. 3, 1971, Ser. No. 112,185
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 P **6 Claims**

Structure for and method of converting an analog shaft position into a digital read out. The structure comprises a wheel including a rim in the form of a cylinder concentrically secured to the shaft for rotation therewith having a plurality of axially extending alternate transparent and opaque areas positioned angularly about the drum rim extending parallel to the shaft, a light source positioned on one side of the rim of the drum in angularly spaced relation to a digital sensor which is also positioned adjacent the rim of the drum on the same side of the drum as the light source, and a fiber optic bundle having the individual fibers thereof reversed at the ends thereof with respect to a single direction of rotation of the drum positioned on the other side of the drum with one end opposite the light source and the other end opposite the digital sensor. The



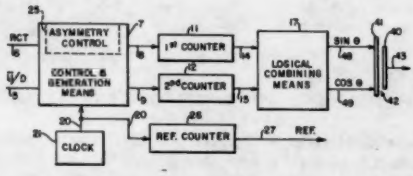
method includes rotating the shaft to rotate the wheel and thus pass the alternate translucent and opaque areas past the light source to provide bits of information in the fiber optic bundle which are transferred through the rotating wheel rim at the light source and are again transferred through the rotating wheel rim in reverse order at the digital sensor whereby the number of digital bits sensed by the sensor in a single revolution of the shaft is doubled with respect to that which would be sensed if the individual fibers in the fiber optic bundle were not reversed.

3,742,487

SCALE OF TWO IMPROVED DIGITAL AND ANALOG CONVERTER

Robert W. Tripp, Tuckahoe, N.Y., assignor to Inductosyn Corporation, Valhalla, N.Y.

Filed Feb. 5, 1971, Ser. No. 112,994
Int. Cl. H03k *13/02*; **H02p** *11/00*
U.S. Cl. 340—347 DA **10 Claims**



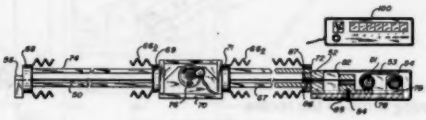
Disclosed is a digital and analog converter which is responsive to a digital value *n*, stored as a running count difference between the counts in two cyclically stepped counters, to form output signals which include analog components suitable as inputs for position-measuring devices such as Inductosyn transducers. The converter typically divides the transducer cycle into N parts where *n* is some value between O and N. A generation means, in accordance with the present invention, generates a change in the digital count difference *n* in response to digital input pulses. Unequal numbers of stepping pulses are supplied to the two counters where the difference in numbers is one for each digital input pulse, but where the total number of stepping pulses varies with different digital input pulses. The different number of total stepping pulses is cyclic and produces, in one embodiment, a 1-bit asymmetry with respect to a reference.

3,742,488

ELECTRO-OPTICAL DIGITAL POSITION INDICATOR

Geza Von Voros, Glen Rock, N.J., assignor to Optogram, Inc., Oakland, N.J.

Filed Aug. 4, 1971, Ser. No. 168,969
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 29 Claims



This invention pertains to an electro-optical digital position indicator wherein in a preferred embodiment a tape is carried by a machine tool worktable and as mounted thereto is passed to and around a precision gage roller which carries a radially arranged grating disc or member. As the roller is driven this disc is rotated and cuts a ray of light provided by a light source. This ray interruption is read by a photosensor and is converted into electrical pulse signals fed to a digital counter and readout. The tape is a thin metal tape maintained at a determined tension so that the gage roller is capable of converting linear into rotary motion with high precision and accuracy. The tape is preferably of a metal having a coefficient of thermal expansion which is substantially that of the machine tool to which it is mounted. A constant tension spring is provided to preset or establish the tape at a determined tension after which the tape is locked. The metal tape then expands and contracts at the same rate as the table upon which it is carried. In a second embodiment the tape is carried and is moved by the worktable so that the tape rotates the precision roller at twice the rate of travel of the worktable. In this embodiment the rotational movement of the radially arranged grating disc is at twice the revolutions per unit length of linear motion than is the like disc carried by a like gage roller in the first embodiment thus permitting a more accurate reading of the table movement to be made. In yet another embodiment, a precision lead screw which is preferably of rather short length is carried in precision bearings mounted in supports carried by and in precise alignment with the movement of the worktable. A precision nut such as a ball nut is in engagement with this precision lead screw and is carried in a support fixed to the machine tool. As thus arranged the lead screw is moved with and is caused to be rotated in response to the movement of the worktable. A rotary grating disc carried on the end of the lead screw feeds electrical pulse signals in the same manner as does the encoder provided for in the tape driven indicators mentioned above. In a similar embodiment, the precision lead screw is finally secured in supports carried by the table of the machine screw while the precision nut is rotatably carried in a support fixed to the base or non-moving bed of the machine tool. The nut carries or drives the interrupter grating disc which, as it rotates as above, cuts a beam of light resulting in electrical pulse signals being fed to the readout. The rotation of the precision nut converts linear motion into electrical pulse signals as in the other embodiments mentioned above.

3,742,489

SAMPLE AMPLIFIERS HAVING AUTOMATIC REGULATION OF THE AMPLIFICATION FACTOR BY DISCRETE VALUES

George Lefevre, Nantes, and Phillippe Angelle, Thouare, both of France, assignors to Societe D'Etudes, Recherches et Constructions Electroniques (S.E.R.C.E.L.), Nantes, France

Filed Oct. 27, 1971, Ser. No. 192,925
Claims priority, application France, Oct. 29, 1970, 7039061
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 9 Claims

In a sample amplifier having gain variable by discrete value, in which it is desired to bring the samples into a range of specific voltages by means of a suitable amplification factor, two comparators are fed respectively by two reference voltages, and the amplified samples taken successively at different points of the amplification chain are compared to these two reference voltages. A logical decision circuit, associated with

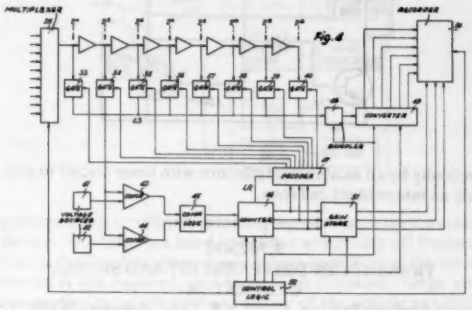


Fig. 4

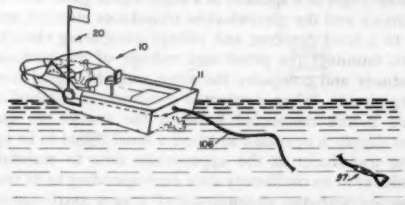
a bi-directional counter, allows the "addressed" command of analogue gates connected respectively to the various points of the amplification chain, so as to effect these two comparisons at points determined by the cabled programme of the counter-deducter.

3,742,490

DISPLAY SYSTEM HAVING FLEXIBLE GEAR

Harvey Henderson, 9311 Tahiti Circle, Huntington Beach, Calif.

Filed Oct. 12, 1970, Ser. No. 80,040
Int. Cl. G08b 5/00
U.S. Cl. 340—371 R 21 Claims



A display system having a collapsible pole, an electromechanical operating system to alternately extend and retract said pole. An electrical control system selectively actuates the operating system.

3,742,491

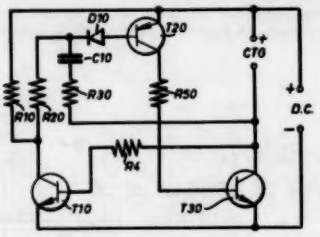
TONE DEVICE HAVING POSITIVE FEEDBACK COMMON EMITTER AMPLIFIER

Peter James Lawson, Shoreham-by-Sea, and Ferenc Kocsis, Hove, both of England, assignors to A. P. Besson & Partner Limited, Hove, England

Filed Dec. 14, 1970, Ser. No. 97,486
Claims priority, application Great Britain, Nov. 13, 1970, 54,173/70
Int. Cl. G08b 3/10
U.S. Cl. 340—384 E 6 Claims

The tone of a call tone device is produced by a positive feedback common emitter amplifier and transducer arrange-

ment. Voltage supply to the tone generator is interrupted



cyclically by an astable multivibrator with timer circuit to provide an intermittent call tone.

3,742,492

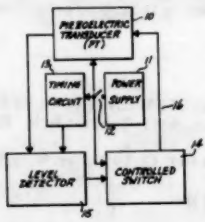
TRANSDUCER DRIVE CIRCUIT AND SIGNAL GENERATOR

Darryl Frederic Proctor, 17402 N.E. 22nd, Bellevue, Wash.

Filed Jan. 11, 1971, Ser. No. 105,583

Int. Cl. H01v 7/00; G08b 3/00

U.S. Cl. 340—384 E **13 Claims**



A transducer such as a piezoelectric element forms part of the diaphragm of a speaker in a sonic signal generator. A timing circuit and the piezoelectric transducer element are coupled to a level detector and voltage comparing circuit. This circuit monitors the phase and voltage of the piezoelectric transducer and compares the same with the signal from the timing circuit. When a selected condition is reached a controlled switch connected between the transducer and the power supply is operated to cause a small signal to be applied to the transducer at the appropriate time to maintain the transducer in an oscillatory state corresponding to its resonant frequency with the expenditure of a very small amount of energy from the power supply.

3,742,493

AUDIBLE SIGNAL APPARATUS

Charles Berne, Brookfield, Conn., assignor to Edwards Company, Inc., Norwalk, Conn.

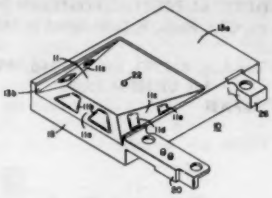
Filed Dec. 6, 1971, Ser. No. 205,094

Int. Cl. G08b 3/00

U.S. Cl. 340—388 **15 Claims**

Audible signal apparatus is provided for manifesting the release of a lock having oppositely disposed mounting flanges and a detnet extending through one side of the lock subject to actuation upon an attempt to release the lock. Such apparatus includes an electromagnetic horn having a mounting bracket extending from one side of its housing and adapted for mounting over one of the flanges of the lock. The bracket contains a switch that is subject to actuation by movement of the detent of the lock to control the horn.

The horn has a diaphragm disposed in a recessed portion of one side of the housing and a sounding box for the horn is formed by securing such side of the housing against a flat



mounting surface with the sound directed from one end of the housing through the recess.

3,742,494

INFORMATION DISPLAY ARRANGEMENTS

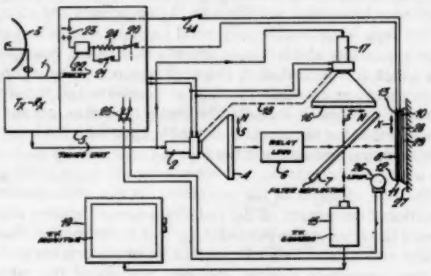
Clifford Arthur Embling, Buckhurst Hill, and Alban Harrison, Woodford Green, both of England, assignors to Smiths Industries Limited, London, England

Filed May 21, 1971, Ser. No. 145,842

Claims priority, application Great Britain, May 22, 1970, 24862/70; May 22, 1970, 24863/70

Int. Cl. G01s 7/26

U.S. Cl. 343—5 R **24 Claims**



A ship's radar includes an electrically-energized image-retaining panel that is exposed continuously to a relative-motion plan-position echo-display on a cathode-ray-tube screen via a relay lens and a frequency-selective optical filter so as to retain images of the display superimposed upon one another. The panel, which displays the cumulatively-retained images in light of a different wavelength from that emitted by the cathode-ray-tube screen, is moved along coordinate axes relative to the cathode-ray tube in accordance with the ship's North-South and East-West components of motion, and is scanned by a stationary television camera using reflection from the frequency-selective optical filter. The cathode-ray-tube display is projected on to the panel through the filter, and the video signals derived by the camera are applied to a television monitor to provide a bright plan-position picture in which only moving-objects have rearwardly-extending true-track 'tails', and the ship itself always appears at the center. Electrical energization of the panel is interrupted periodically to erase the historical record, and the panel is primed to a highly light-sensitive state each time the energization is restored, by a procedure of first flooding it with light transitorily and then reducing the applied voltage transitorily.

3,742,495

DRONE GUIDANCE SYSTEM AND METHOD

Nicholas D. Diamantides, Cuyahoga Falls, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

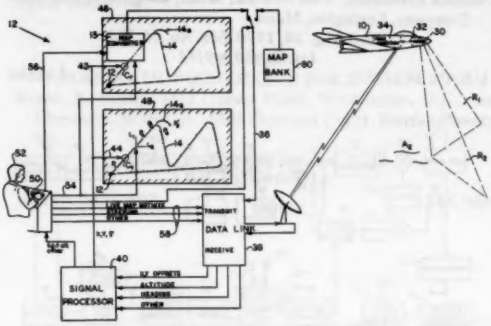
Continuation-in-part of Ser. No. 592,532, Nov. 7, 1966, Pat. No. 3,609,762. This application Sept. 24, 1971, Ser. No. 183,394

Int. Cl. G06f 15/50

U.S. Cl. 343—5 MM **15 Claims**

A drone aircraft is guided over a desired flight path wherein line map correlation provides *x* and *y* offsets from the desired

fixed point. The x, y offset signals are used to drive the actuators of the drone's control surfaces and also provide positional information to a monitored display at the control station.



3,742,496

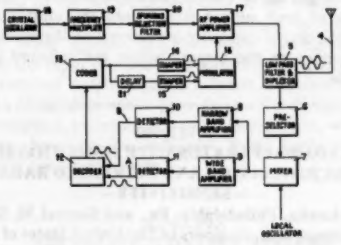
PRECISION DME COMPATIBLE WITH TACAN

Maurice L. Jezo, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 7, 1971, Ser. No. 104,688

Int. Cl. G01s 9/56

U.S. Cl. 343—6.5 R **2 Claims**



This invention relates to distance measuring equipment compatible with existing tactical air navigation systems. A first sharp pulse and a second rounded pulse replace the standard first and second rounded pulses of existing systems. The first sharp pulse improves distance accuracy in two ways. The decision level is reached sooner and the crossing of the decision zone is shorter. The second rounded pulse provides for the required adjacent channel rejection.

3,742,497

SAFETY DEVICE FOR VEHICLE PASSENGERS

Kazuo Sato; Tomio Hisatsune, both of Toyota, and Hisashi Watanabe, Toyohashi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

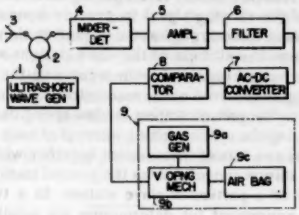
Filed Mar. 26, 1971, Ser. No. 128,333

Claims priority, application Japan, Aug. 19, 1970, 45/72066

Int. Cl. G01s 9/46

U.S. Cl. 343—7 ED **5 Claims**

The Doppler effect is used to detect the imminence of a potential collision between a moving vehicle and an object in its path to provide a detecting signal for the safety of the vehicle occupants. A potential collision detecting system includes an ultrashort wave generator, a coupler connecting the generator to a transmitting and receiving antenna, a mixer-detector connected to the generator and the antenna through the coupler, an amplifier, a filter, an AC-DC converter, a comparator and a safety device for protecting vehicle occupants. The mixer-detector derives the Doppler signal and the time remaining until the occurrence of a collision is derived by converting the frequency of the Doppler signal to a signal level by means of a filter having certain frequency characteristics. The comparator converts the remaining time to a voltage and, when the voltage exceeds a predetermined value, the comparator issues a collision detecting signal to activate the safety device. The filter is a band pass filter which cuts off frequencies in the low frequency range, where operation of the safety device is not required, and in the high frequency range corresponding to a high relative velocity of the vehicle not likely to be met in practice.



3,742,498

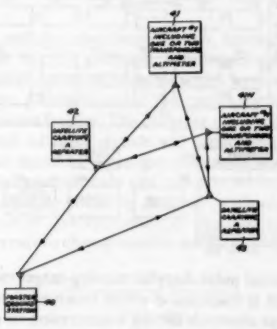
SYNCHRONIZATION AND POSITION LOCATION SYSTEM

James G. Dunn, Montclair, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed May 6, 1970, Ser. No. 35,049

Int. Cl. H04b 7/20

U.S. Cl. 343—7.5 **10 Claims**



A master station and N slave stations include synchronization equipment to enable each of the stations to have access to a common repeater in a different one of M time slots of a TDM format at the repeater, there being motion between the master and slave stations and the repeater. Each time slot is employed on a push-to-talk basis for N/M slave stations. The master station propagates a reference sync burst through the repeater. Each of the stations receive this master sync burst from the repeater. The master station adjusts the frequency of the timing signals therein to compensate for the doppler shift experienced in the propagation path from the master station to the repeater and each of the slave stations adjusts the frequency of the timing signals therein to compensate for the doppler shift experienced in the propagation path from each of the slave stations to the repeater so that the desired frequency of the timing signals is present at the repeater. The master station in response to the received master sync adjusts its timing signals so that the signals propagated therefrom arrive in the proper time slot of the TDM format at the repeater. Each of the slave stations propagate a different low power level, psuedo noise code ranging signal through the repeater to the master station. The phase information of this ranging

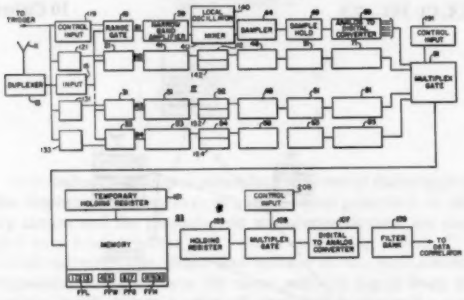
signal is detected in the master station, coded, and transmitted to the appropriate one of the slave stations. This phase information is responded to in the appropriate slave station to adjust the phase of its timing signals so that data bursts of each of the slave stations appear in the proper time slot of the TDM format at the repeater. The ground station responds to the phase of the received master reference signal and the phase information of the ranging signal to provide a measure of the satellite-to-slave station range at the ground station. In a single satellite system, the altitude of the slave stations and the rate of change or range, obtained from measuring the doppler of the carrier signal received at the associated slave station and is transmitted to the ground station in slow speed data channels provided during the synchronizing interval of each of the data bursts. These two bits of information together with the satellite-to-slave station range enables the ground station to locate the position of a particular slave station. In a two satellite system, the equipment for determining the satellite-to-slave station range is duplicated for cooperation with a second satellite so that the altitude of the slave station and the satellite-to-repeater range for both satellites enable the position location of a particular slave station at the ground station.

3,742,499

PULSE DOPPLER MOVING-TARGET RADAR

William W. Beydler, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 797,932, Feb. 10, 1969, abandoned.
Filed May 25, 1971, Ser. No. 146,743
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **10 Claims**



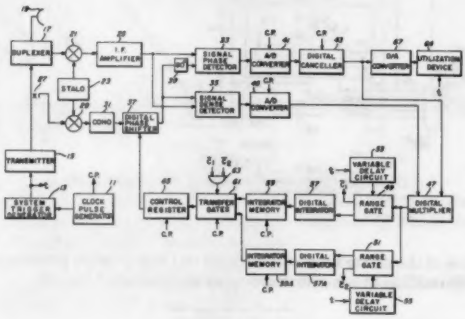
Multi-channel pulse-doppler moving-target radar with a single filter bank is disclosed in which received signals are passed through range channels during a succession or cycle of range sub-intervals of the main interval between transmitted pulses. Wave signals of the doppler shift frequency are derived from these range signals and these are sampled and converted into digital values, typically made up of six digit words, and stored in a three-dimensional, typically ferrite, memory core in the order in which they are received; that is, the magnitudes for all channels in succession during a cycle of first sample interval, the magnitudes for all channels during a cycle of second sample interval and so on. During storing the core is filled level by level along the heighth. The signals in the memory core for each channel in its turn; that is, all signals for the first channel, then all signals for the second channel, and so on are then passed through a filter bank and the data correlated. The signals are removed from the core in groups in a rearrangement of the order in which they are stored but in the same level by level order. The desired speed in presenting the data is achieved by removing a plurality of words from the memory core during each successive removal operation. The storage and removal is effected by selective operation of counters. The invention provides facilities for operating into all channels with a single filter bank without complicated storage and removal functions and without a core requiring complicated matrix wiring.

3,742,500

MTI RADAR

Nathan Freedman, West Newton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 24, 1970, Ser. No. 66,394
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **1 Claim**



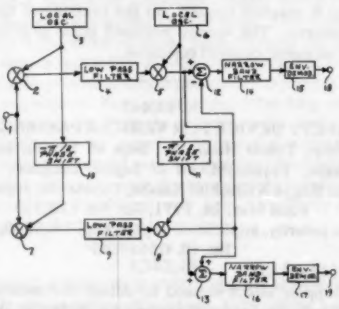
A radar system adapted to discriminate between signals from clutter and moving targets. The disclosed system includes at least one digital canceller and an associated digital correction circuit which together are operative to produce a digital signal indicative of the average Doppler frequency of all targets within a selected group of range cells. Such digital signal, in turn, is applied to a digital phase shifter in circuit with the output signal from a reference oscillator to shift the frequency of such output signal until the clutter rejection notch of the digital canceller is centered on the average Doppler frequency of the targets within the selected group of range cells.

3,742,501

RADAR APPARATUS WITH DIRECTIONAL DISCRIMINATION AND INCREASED RADAR SENSITIVITY

Harry Urkowitz, Philadelphia, Pa., and Samuel M. Sherman, Moorestown, N.J., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 21, 1972, Ser. No. 236,630
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **3 Claims**



A radar apparatus with directional discrimination and improved detection is provided. A monostatic radar system has its transmitter and receiving antenna at the same location. Target motion toward or away from the radar is discovered by determining the direction of the doppler frequency shift imposed upon the reflected electromagnetic energy after impinging on a target. Directional capability is obtained by determin-

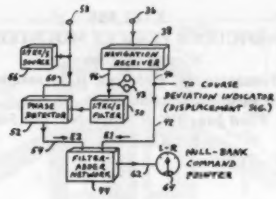
ing whether the doppler frequency shift is positive or negative and simultaneously there is also provided increased radar signal sensitivity.

3,742,502

POLARIZATION REFERENCE FOR BEAM FLYING

Frank B. Brady, 5322 Carvel Road, Washington, D.C., and Chester B. Watts, Jr., 6505 Pinecrest Court, Fairfax County, Va.

Filed Jan. 9, 1970, Ser. No. 1,742
Int. Cl. G01s 1/14
U.S. Cl. 343—107 11 Claims



This invention relates to airborne antenna systems for the reception of signals from stations transmitting bearing information as displacement from a course-line or fixed beam such as VOR or runway localizer stations.

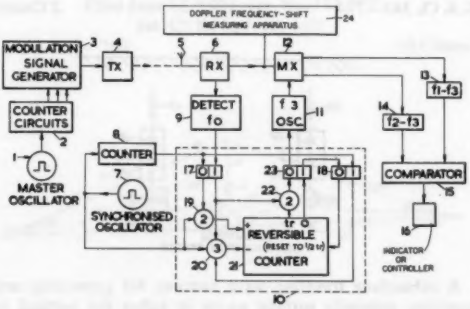
In addition to the usual antenna for receiving the course displacement signals, an antenna element is provided having an output signal which is responsive to the attitude of the airplane as referred to the polarization-plane of the radio field. This polarization-referenced signal is modulated for identification prior to being applied, together with the regular antenna signal, to the input terminal of a standard navigation receiver. At the receiver output, the modulation is recovered and applied to a phase-detector to provide an attitude signal containing information, necessary for stable beam flight, which would otherwise have to be obtained from gyro-horizon and directional gyro instruments.

3,742,503

AIR TRAFFIC CONTROL SYSTEMS

Andrew Stratton, Farnborough, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 19, 1971, Ser. No. 144,838
Claims priority, application Great Britain, May 20, 1970, 24,413/70
Int. Cl. G08g 5/00
U.S. Cl. 343—112 TC 6 Claims



An air traffic headway control system comprises a ground transmitter located en route and a receiver in each aircraft. The transmitter transmits cyclic sequences of distinctive signals whose timing is controlled by a highly stable master oscillator. These are received in the aircraft which also has a stable oscillator synchronized to the master oscillator of the transmitter.

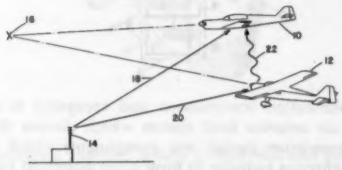
Reference pulses which are timed with respect to the stable oscillator are generated in the receiver and a comparison is made between the timing of the reference pulses and the time of reception of the sequences of distinctive signals to provide an indication of the position of the aircraft in the lane. A perturbation is applied to the timing of the beginning of each sequence which represents the desired motion of the aircraft. The receiver also includes means for controlling the speed of the aircraft in accordance with its indicated position so as to maintain or correct its position. The means for making the comparison in timing preferably includes a correlation detector.

3,742,504

AIRCRAFT COLLISION AVOIDANCE SYSTEM BY PASSING MEANS

Marvin W. Shores, Pomona, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed June 21, 1971, Ser. No. 154,969
Int. Cl. G01s 3/02
U.S. Cl. 343—112 CA 4 Claims



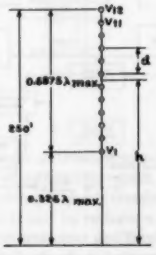
A passive collision avoidance system, having particular applicability to aircraft collision avoidance, comprising two receivers operating out of antennas which have a differing sensitivity to the polarization of the incoming signals from a ground broadcast facility. The differing sensitivity ensures that the direct and reflected signals will predominate in different receivers and therefore when the outputs of the receivers are combined the resultant fade rate will give an indication of the movement of the intruding aircraft with respect to the equipped aircraft. Interpretation of the fade rate allows the equipped aircraft to change course until a non-collision course is attained.

3,742,505

IDENTIFICATION OF ELEVATION ANGLE OF ARRIVAL OF MULTIPLE IONOSPHERIC REFLECTIONS

Arthur F. Lyle Rocke, Olney, Md., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed May 27, 1971, Ser. No. 147,550
Int. Cl. G01s 3/46
U.S. Cl. 343—113 R 8 Claims



This invention relates to a method for measuring the elevation angles of arrival of radio waves including those due to

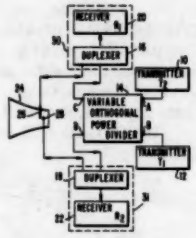
multiple ionospheric reflections. The wave interference of multimode C.W. signals is displayed as a Lissajous figure which contains information concerning elevation angle and relative magnitude of each mode. Any one mode can be removed from the display by the proper height selection of the vertically disposed antenna elements.

3,742,506

DUAL FREQUENCY DUAL POLARIZED ANTENNA FEED WITH ARBITRARY ALIGNMENT OF TRANSMIT AND RECEIVE POLARIZATION

Ernest James Wilkinson, Sudbury, Mass., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Mar. 1, 1971, Ser. No. 119,768
Int. Cl. H01q *3/26*
U.S. Cl. 343—176 **10 Claims**



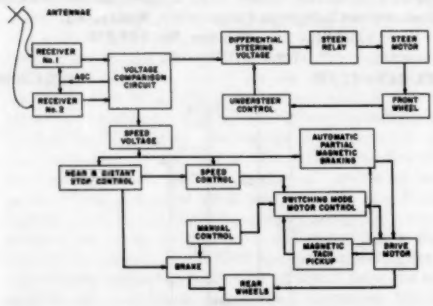
Dual polarization transmission and reception is accomplished in an antenna feed system which divides first and second transmission signals into components which recombine in an antenna radiator to form cross polarized transmission signals. Frequency separating duplexers enable the simultaneous transmission and reception of pairs of dual polarized transmit and receive signals. The radiator includes first and second linearly polarized probes positioned along the axes of the received cross polarized signals. Faraday rotation can be compensated for by varying the planes of polarization of the transmit signals with respect to the planes of polarization of the receive signals. The latter variation is accomplished by varying the power division of the first and second transmission signals.

3,742,507

AUTOMATIC GOLF BAG CART

John E. Pirre, 136 Cold Spring Road, Stamford, Conn.

Filed Sept. 10, 1970, Ser. No. 71,113
Int. Cl. G08c *17/00*; **A63h** *30/00*
U.S. Cl. 343—22 S **13 Claims**



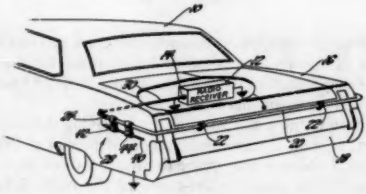
A battery-powered golf bag cart responsive to signals from a movable transmitter carried in the pocket of a golfer, the cart and transmitter being preferably electromagnetically coupled to each other, a receiver in the cart for picking up signals from the transmitter, a battery powered motor for moving the vehicle along the ground towards the transmitter, means for steering the vehicle in the direction of the golfer, brake means for sometimes preventing movement of the vehicle, speed control means in the receiver and responsive to signals within a given range of signal strength for actuating the motor to drive the vehicle towards the golfer, steer control means in the receiver for sensing the position of the golfer and for steering the vehicle towards the golfer, and a stop-control circuit in the receiver responsive to signals (or no signal) falling outside of the predetermined range of signal strength for actuating the brakes and for simultaneously preventing actuation of the drive motor.

3,742,508

INCONSPICUOUS VEHICLE MOUNTED RADIO ANTENNA

Donald E. Tomaszewski, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 1, 1971, Ser. No. 148,546
Int. Cl. H01q *1/32*
U.S. Cl. 343—713 **1 Claim**



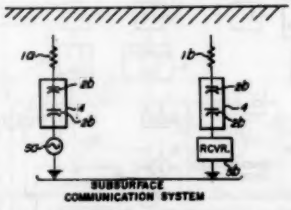
A conductive rod is mounted in spaced relationship to the outer body of an automotive vehicle to provide a decorative ornament for the vehicle and to provide an inconspicuous antenna for a radio receiver contained within the vehicle. The capacitance developed between the conductive rod and the vehicle body tunes the rod to act as a quarter wavelength antenna. An adjustable connector assembly couples the conductive rod to the radio receiver so as to match the output impedance of the antenna to the input impedance of the radio receiver.

3,742,509

SUBSURFACE TRAVELING WAVE ANTENNA

Joseph T. DeBettencourt, West Newton, and Carson K. H. Tsao, Braintree, both of Mass., assignors to Raytheon Company, Lexington, Mass.

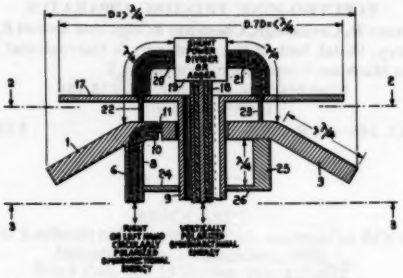
Continuation of Ser. No. 48,889, June 15, 1970, abandoned, which is a continuation of Ser. No. 742,074, July 2, 1968, abandoned. This application Nov. 11, 1971, Ser. No. 197,989
Int. Cl. H01q *1/04*
U.S. Cl. 343—719 **2 Claims**



A subsurface traveling wave antenna for generating and receiving primarily surface waves in either the vertical or horizontal position below the surface. The antenna comprises an insulated linear radiating element terminated with a matched load for coupling a portion of the surface wave com-

ponent. Impedance elements interconnecting portions of the radiating element at periodic intervals along its extent provide speed matching between the phase velocity of the wave propagating down the radiating element and the surface wave component.

3,742,510
MULTIMODE DISCONE ANTENNA
William M. Spanos, Wayne, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Feb. 12, 1971, Ser. No. 105,884
Int. Cl. H01q *1/00*
U.S. Cl. 343—730 **10 Claims**

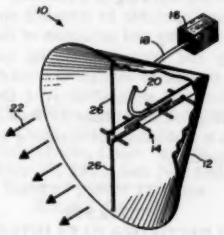


A turnstile antenna includes four arms disposed concentric of a vertical axis and orthogonally related to each other so that diagonally related arms form a dipole. The four arms are physically and electrically coupled to a circular member disposed coaxially of the vertical axis. The four arms extend downward at an angle less than 90° with respect to the vertical axis. The pair of dipoles have a first energy coupling arrangement for orthogonal energy coupled to adjacent orthogonal arms to provide right and left hand circularly polarized omnidirectional patterns. A cylinder disposed coaxially of the vertical axis and spaced from the circular member extends through the turnstile antenna to support a disc therefrom in a perpendicular relation to the vertical axis and above the turnstile antenna. A second energy coupling arrangement for inphase energy is coupled to the disc and diagonally disposed arms of the turnstile antenna. The thusly formed combination provides a discone antenna having a vertically polarized omnidirectional pattern. Two variations of both the first and second energy coupling arrangements are disclosed.

3,742,511
LOW-LOSS ANTENNA SYSTEM WITH COUNTERPOISE INSULATED FROM EARTH
Carl E. Smith, and John D. Musselman, both of Brecksville, Ohio, assignors to Smith Electronics, Inc., Brecksville, Ohio
Filed June 15, 1971, Ser. No. 153,372
Int. Cl. H01q *1/48, 9/00*
U.S. Cl. 343—750 **10 Claims**

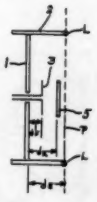
An improved antenna system for transmitting and/or receiving electromagnetic waves, having a counterpoise insulated from the earth and in which the counterpoise is connected to one terminal of a transmitter or receiver through an inductance. The inductance is tuned in conjunction with the tuning of a conventional loading inductance coil so as to maximize the field strength radiated by the antenna into the far field. The power lost in the earth or other antenna supporting surface is unusually small, so that radiated power is large.

3,742,512
DIRECTIONAL ANTENNA SYSTEM WITH CONICAL REFLECTOR
Robert E. Munson, Boulder, Colo., assignor to Ball Brothers Research Corporation, Boulder, Colo.
Filed Dec. 18, 1970, Ser. No. 99,438
Int. Cl. H01q *21/12*
U.S. Cl. 343—814 **2 Claims**



A directional antenna system is disclosed and generally includes a passive conical reflector and an active feed assembly comprising a plurality of effective half-wave dipoles or element radiators and extending perpendicular thereto. The dipoles are simultaneously excited by in-phase signal energy so as to produce electromagnetic wave energy which is directed to the conical reflector and reflected therefrom in a direction parallel with the axis thereof.

3,742,513
OPTIMIZED REFLECTOR ANTENNA
Hermann W. Ehrenspeck, 94 Farnham St., Belmont, Mass.
Filed Feb. 15, 1972, Ser. No. 226,478
Int. Cl. H01q *19/10*
U.S. Cl. 343—817 **17 Claims**

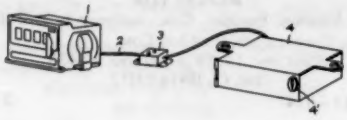


An optimized reflector antenna is provided which includes a reflector with a rim of adjustable width around its perimeter and a feed system having a predetermined spacing from the reflector. The rim is excited by radiation coupling and its edge acts like a secondary radiator that yields a substantial and unique effect on the radiation patterns of the antenna by preselecting the rim dimensions in amplitude and phase in reference to the feed system.

3,742,514
RECORDING APPARATUS FOR USE WITH A TAXIMETER

Sadaji Sugimura, Shimada, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Nov. 19, 1970, Ser. No. 91,049
Int. Cl. G07b *13/00*
U.S. Cl. 346—33 R **5 Claims**

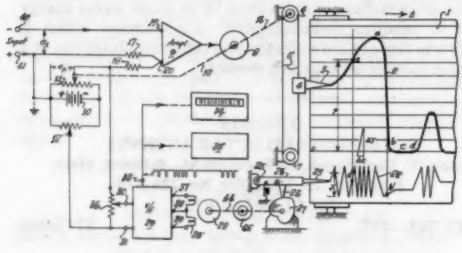


An apparatus to be used with a taximeter for recording in a continuous form the working of a taxicab, which comprises a transmitter means operable to transmit electrical signals in response to the working and actuation of the taximeter and a signal receiving and recording means operable, upon its receipt of said signals, to actuate a recording device which converts the electrical signals received thereby to records made onto a strip of a continuous form, said strip being mountable onto a calculator for counting up various data of the working of taxicab.

3,742,515
CHART RECORDER DATA INTEGRATOR

John O. Yeiser, Mission Viejo, Calif., assignor to Milton Roy Company, St. Petersburg, Fla.

Filed Aug. 21, 1970, Ser. No. 65,950
Int. Cl. G01d *1/04, 9/30*
U.S. Cl. 346—49 **3 Claims**

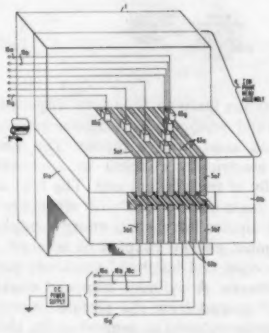


An integrator for continuously computing the area under a curve drawn by a chart recorder, and displaying the area information along the edge of the chart. The integrator uses a voltage-to-frequency converter which derives its input from the slidewire circuitry of a potentiometric null-balance recorder of known type. The converter output drives a stepping motor at a rate depending on the ordinate position on the main recording pen. The stepping motor drives a cam which moves an auxiliary pen back and forth, to draw a triangular wave of variable spatial frequency. The area under any selected portion of the chart curve is found by counting cycles of this wave. The converter also delivers a pulse output which may be fed to an external counter, or recorded, as on magnetic tape, for later recovery or for processing with respect to other tapes or data in a digital computer.

3,742,516
ELECTRO-IONIC PRINTING APPARATUS

Lawrence R. Cavanaugh, Chenango Bridge, and Robert E. McCurry, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1972, Ser. No. 235,186
Int. Cl. G11b *9/08*
U.S. Cl. 346—74 R **5 Claims**

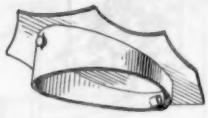


An improved printing head for forming electrostatic images on a dielectric surface by controlling the relative ion concentration in a gas stream moving through a slot and directed upon said dielectric surface. Application of an electric field across selected pairs of an array of spaced electrodes in the slot enables the stream to vary in ion concentration so as to cause the formation of a desired linear charge configuration on the dielectric. Selective application of low voltage electric fields to selected arrays of the electrodes causes formation of desired image charge configurations on the dielectric surface.

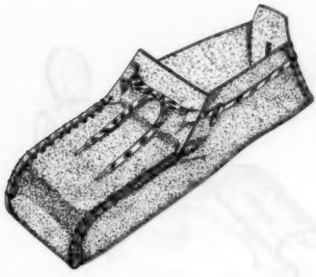
DESIGNS

JUNE 12, 1973

227,418
NURSES CAP
Evelyn Waites, 793 Fairmont Place, Bronx, N.Y. 10460
Filed May 2, 1972, Ser. No. 249,756
Term of patent 14 years
Int. Cl. 2—*03*
U.S. Cl. D2—230



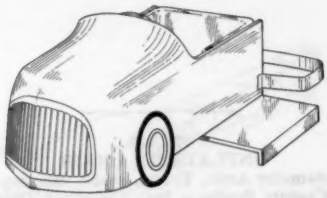
227,419
MOCCASIN
Horst Lachmayr, Columbus, Ohio, assignor to SCOA Industries, Inc., Columbus, Ohio
Filed Feb. 25, 1972, Ser. No. 229,612
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—268



227,420
BOOT
Tatsuo Fukuoka, 3,3-Ban, 2-chome, Shin-Minami-Fukushima, Japan
Filed Nov. 4, 1971, Ser. No. 195,896
Claims priority, application Japan, Oct. 1, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—275

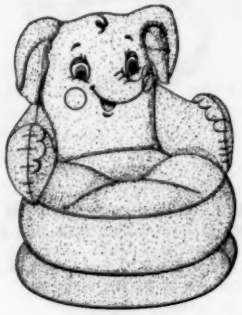
227,421
PULL FOR A SLIDE FASTENER
Michel Louis Dupon, Rue de Luynes 80-Airaines, France
Filed Apr. 29, 1971, Ser. No. 138,858
Term of patent 3½ years
Int. Cl. D2—*07*
U.S. Cl. D2—415

227,422
BARBER CHAIR ATTACHMENT FOR CHILDREN
Rodger D. McClellan, P.O. Box 551, Bristolville, Ohio 44402
Filed May 17, 1971, Ser. No. 144,373
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—09



227,423
INFLATABLE CHAIR
Sutematsu Ando, Tokyo, Japan, assignor to Century Products, Inc., Cleveland, Ohio
Filed May 4, 1971, Ser. No. 140,310
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—12

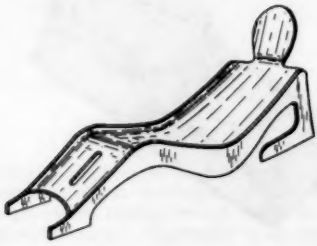
227,424
INFLATABLE CHAIR
Sutematsu Ando, Tokyo, Japan, assignor to Century Products, Inc., Cleveland, Ohio
Filed May 6, 1971, Ser. No. 141,081
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—12



227,425
INFLATABLE CHAIR
Sutematsu Ando, Tokyo, Japan, assignor to Century Products, Inc., Cleveland, Ohio
Filed May 7, 1971, Ser. No. 141,257
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—12

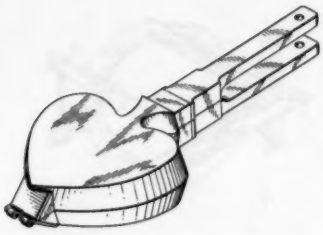
227,426
END FRAME FOR A CRIB
Allen D. Jacobs, Los Angeles, Calif., assignor to Questor Corporation, Toledo, Ohio
Filed Mar. 21, 1972, Ser. No. 236,800
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—14

227,427
CHAIR
Stanley H. Hutchinson, Sierra Madre, Calif., assignor to David E. Vaughn, Owosso, Mich.
Filed Oct. 12, 1971, Ser. No. 188,655
Term of patent 14 years
Int. Cl. 6—*01*
U.S. Cl. D6—37

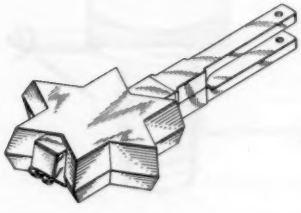


227,428
SKILLET OR SIMILAR ARTICLE
John Di Lorenzo, 235 W. 46th St., New York, N.Y. 10036
Filed Feb. 7, 1972, Ser. No. 224,374
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85

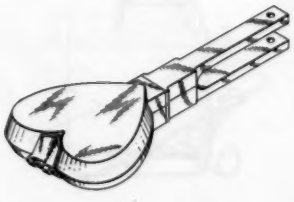
227,429
SKILLET OR SIMILAR ARTICLE
John Di Lorenzo, 235 W. 46th St., New York, N.Y. 10036
Filed Feb. 1, 1972, Ser. No. 222,713
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85



227,430
SKILLET OR SIMILAR ARTICLE
John Di Lorenzo, 235 W. 46th St., New York, N.Y. 10036
Filed Feb. 1, 1972, Ser. No. 222,715
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85

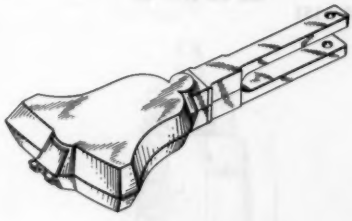


227,431
SKILLET OR SIMILAR ARTICLE
John Di Lorenzo, 235 W. 46th St., New York, N.Y. 10036
Filed Feb. 1, 1972, Ser. No. 222,716
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85



227,432
SKILLET OR SIMILAR ARTICLE
John Di Lorenzo, 235 W. 46th St., New York, N.Y. 10036
Filed Feb. 1, 1972, Ser. No. 222,718
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85

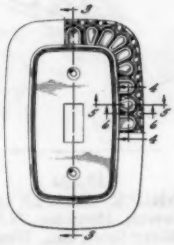
227,433
SKILLET OR SIMILAR ARTICLE
John Di Lorenzo, 235 W. 46th St., New York, N.Y. 10036
Filed Feb. 7, 1972, Ser. No. 224,414
Term of patent 3½ years
Int. Cl. D7—*02*
U.S. Cl. D7—85



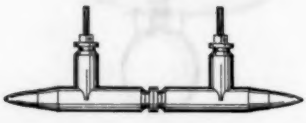
227,434
SPOON OR SIMILAR ARTICLE OF FLATWARE
Richard C. Gavette, Hampton, N.H., assignor to Fortunoff Silver Sales, Inc., Westbury, N.Y.
Filed Aug. 7, 1972, Ser. No. 278,406
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

227,435
GRIP-LIFT ADAPTER FOR DOOR LATCHES OR THE LIKE
Robert E. Brown, 3725 Baldwin St., El Monte, Calif. 91731; and Clyde L. Vance, 10320 Pinehurst Ave., South Gate, Calif. 90280
Filed Apr. 10, 1972, Ser. No. 242,890
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—161

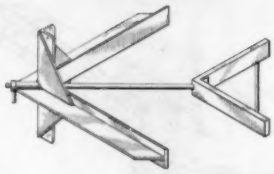
227,436
ELECTRIC WALL PLATE
Martin R. Lambertz, New Hamburg, Ontario, Canada, assignor to Amerock Corporation, Rockford, Ill.
Original design application May 25, 1970, Ser. No. 23,119, now Patent No. D. 223,746, granted June 6, 1972. Divided and this application Aug. 2, 1971, Ser. No. 168,521
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—181



227,437
DRAWER PULL FOR CABINETS OR THE LIKE
James L. Pruitt, Great Falls, Mont. (P.O. Box 262, Strawn, Tex. 76475)
Original design application June 18, 1970, Ser. No. 23,563. Divided and this application Oct. 25, 1972, Ser. No. 300,453
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—189

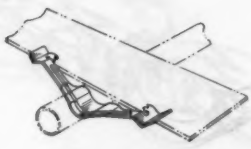


227,438
CLAMP FOR CORNER CONCRETE FORMS
Daniel Priore, 2265 SW. 15th St., Miami, Fla. 33145
Filed Sept. 15, 1971, Ser. No. 180,939
Term of patent 14 years
Int. Cl. D8—*08, 05*
U.S. Cl. D8—228

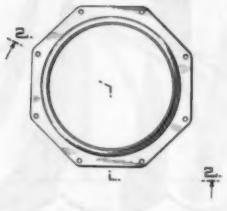


227,439
HOLDER FOR PAINT CANS ON LADDERS
Alvin O. Brothers, 2001 E. Franklin St., Evansville, Ind. 47711
Filed July 26, 1971, Ser. No. 166,330
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—233

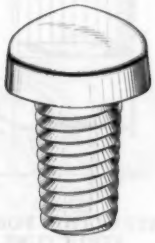
227,440
CONDUIT CLIP
Raymond L. Martz, Palatine, Ill., assignor to Minerallac Electric Company, Chicago, Ill.
Filed June 26, 1972, Ser. No. 247,910
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



227,441
TAG HOLDER
Vyto Simkus, Chicago, Ill., assignor to American Flange & Manufacturing Co., Inc., New York, N.Y.
Filed Mar. 19, 1971, Ser. No. 126,383
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—243

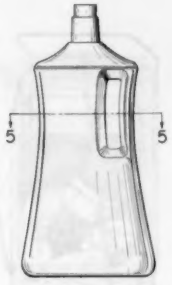


227,442
SCREW
Masahito Ebi, Aichi-ken, Japan, assignor to Chukyo Dies Co., Ltd., Konan-shi, Aichi-ken, Japan
Filed July 11, 1972, Ser. No. 270,824
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267

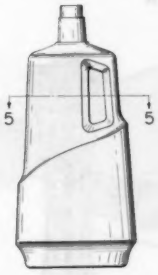


227,443
JUG
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 27, 1972, Ser. No. 238,755
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40

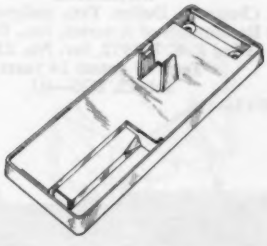
227,444
JUG
Gordon A. Strand, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 31, 1972, Ser. No. 240,333
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40



227,445
JUG
Gordon A. Strand, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 31, 1972, Ser. No. 240,323
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



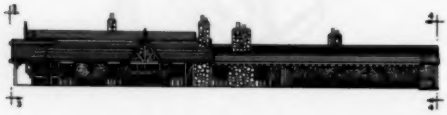
227,446
HOLDER FOR A RAZOR AND A BLADE DISPENSER
Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Apr. 17, 1972, Ser. No. 245,042
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186



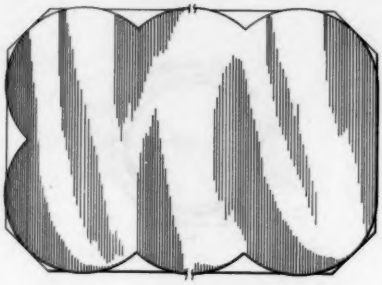
227,447
FOLDABLE BOX
Gotz Pinkert, Aschaffenburg, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Germany
Filed Aug. 27, 1971, Ser. No. 175,805
Claims priority, application Germany Mar. 1, 1971
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—226

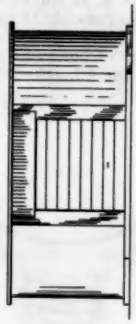
227,448
TOWER
Joel H. Rosenblatt, Silver Spring, Md., assignor to National Gettysburg Battlefield Tower, Inc., Bethesda, Md.
Filed Sept. 10, 1971, Ser. No. 179,610
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R

227,449
BUILDING
Max D. Chapman, Dallas, Tex., assignor to Steak and Ale Restaurants of America, Inc., Dallas, Tex.
Filed Feb. 7, 1972, Ser. No. 224,390
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B

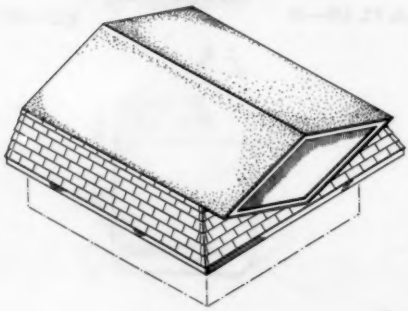


227,450
BUILDING
Charles R. Turner, Hopkins, Mo., assignor to Advance Concrete and Asphalt Co., Maryville, Mo.
Filed Feb. 17, 1972, Ser. No. 227,338
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R

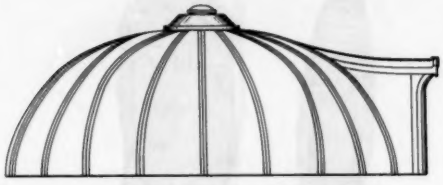




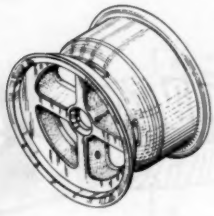
227,451
ROOF CONSTRUCTION FOR A BUILDING STRUCTURE
William Seibert, Haddonfield, N.J., assignor to The Frostie Company, Camden, N.J.
Filed Mar. 20, 1972, Ser. No. 236,575
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 R



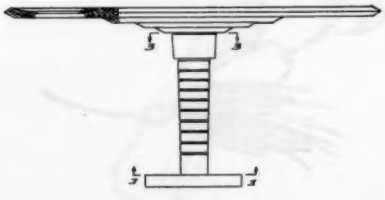
227,452
SHELTER
Charles W. Moss, Ann Arbor, Mich., assignor to Tension Structures, Inc., Plymouth, Mich.
Filed May 25, 1972, Ser. No. 257,072
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 E



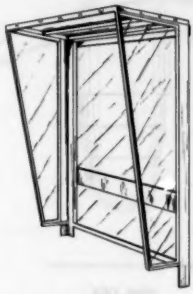
227,453
RACING WHEEL
Maurice Phillippe, Redondo Beach, Calif., assignor to Vel's Ford Sales Co., Inc.
Filed Apr. 12, 1972, Ser. No. 243,534
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—30 R



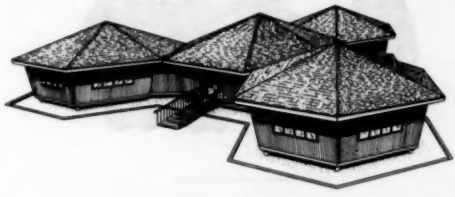
227,454
CANOPY
Jimmie L. Jones, Salt Lake City, Utah, assignor to Ute Indian Tribe of the Uintah and Ouray Reservation, Uintah County, Utah
Filed May 2, 1972, Ser. No. 249,748
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 D



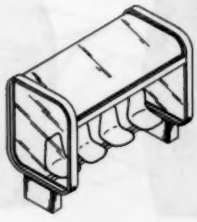
227,455
BUS SHELTER
Richard L. Sklaar, 13 Terrace Circle, Great Neck, N.Y. 11021
Filed May 10, 1972, Ser. No. 252,150
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 D



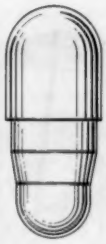
227,456
RESTAURANT BUILDING
William O. Fulmer, Columbia, S.C., assignor to Shuck 'N Shell Shrimp Shacks, Inc., Columbia, S.C.
Filed May 16, 1972, Ser. No. 253,916
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



227,457
SHELTER
William Sklaroff, Bala Cynwyd, Pa., assignor to Tubular Products, Inc., Souderton, Pa.
Filed July 3, 1972, Ser. No. 268,405
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 D



227,458
CAPSULE
Nick C. Pogacich, Centerline, and Richard J. Graham, Grosse Pointe, Mich., assignors to Parke, Davis & Company, Detroit, Mich.
Filed Aug. 3, 1971, Ser. No. 168,802
Term of patent 14 years
Int. Cl. D28—*01*
U.S. Cl. D16—3



227,459
VITAMIN TABLET OR SIMILAR ARTICLE
Ian C. Modelevsky, Pleasantville, Benjamin S. De Young, Sands Point, and Donald Nevins, East Elmhurst, N.Y., and Anthony Stern, Mexico City, Mexico, assignors to Bristol-Myers Company, New York, N.Y.
Filed June 27, 1972, Ser. No. 266,762
Term of patent 14 years
Int. Cl. D1—*01*; D28—*01*
U.S. Cl. D16—3

227,460
VITAMIN TABLET OR SIMILAR ARTICLE
Ian C. Modelevsky, Pleasantville, Benjamin S. De Young, Sands Point, and Donald Nevins, East Elmhurst, N.Y., and Anthony Stern, Mexico City, Mexico, assignors to Bristol-Myers Company, New York, N.Y.
Filed June 27, 1972, Ser. No. 266,763
Term of patent 14 years
Int. Cl. D1—*01*; D28—*01*
U.S. Cl. D16—3

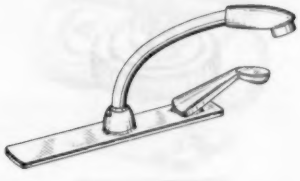
227,461
VITAMIN TABLET OR SIMILAR ARTICLE
Ian C. Modelevsky, Pleasantville, Benjamin S. De Young, Sands Point, and Donald Nevins, East Elmhurst, N.Y., and Anthony Stern, Mexico City, Mexico, assignors to Bristol-Myers Company, New York, N.Y.
Filed June 27, 1972, Ser. No. 266,774
Term of patent 14 years
Int. Cl. D1—*01*; D28—*01*
U.S. Cl. D16—3

227,462
FISHING FLY
Randolph A. Skeie, 4460 Darley Ave., Boulder, Colo. 80203
Filed July 28, 1971, Ser. No. 167,065
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

227,463
FISHING LURE
George S. Perrin, Fort Smith, Ark., assignor to Plastic Research and Development Corporation, Fort Smith, Ark.
Filed June 5, 1972, Ser. No. 260,051
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

227,464
FISHING LURE
Dallas F. Weldon, 612 W. Hickory St., Sylacauga, Ala. 35150
Filed Aug. 29, 1972, Ser. No. 284,599
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

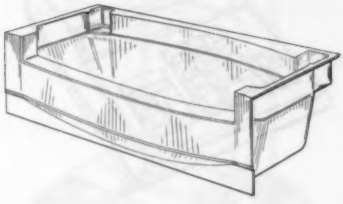
227,465
COMBINED KITCHEN FAUCET AND HANDLE
Donald M. Genaro, Haworth, N.J., and Charles W. Pelly, Scarsdale, N.Y., assignors to American Standard Inc., New York, N.Y.
Filed Mar. 6, 1972, Ser. No. 232,356
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23



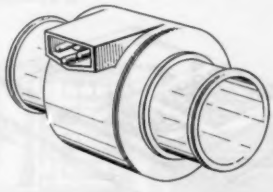
227,466
HANDLE FOR A PLUMBING FITTING
Donald M. Genaro, Haworth, N.J., and Charles W. Pelly, Scarsdale, N.Y., assignors to American Standard Inc., New York, N.Y.
Filed Mar. 6, 1972, Ser. No. 232,348
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—29

227,467
SPOUT
Donald M. Genaro, Haworth, N.J., and Charles W. Pelly, Scarsdale, N.Y., assignors to American Standard Inc., New York, N.Y.
Filed Mar. 6, 1972, Ser. No. 232,358
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32

227,468
BATHTUB
Merritt W. Seymour, Sylvania, Ohio, assignor to Owens-Corning Fiberglas Corporation
Original design application Jan. 11, 1971, Ser. No. 105,791. Divided and this application Mar. 31, 1972, Ser. No. 240,343
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



227,469
ENGINE PREHEATER
Bernard H. Pickard, Toronto, Ontario, Canada, assignor to Bardon Research and Development Limited, Toronto, Ontario, Canada
Filed July 6, 1971, Ser. No. 160,269
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—86



227,470
DENTAL MIRROR STRUCTURE
James Vannes Boone, Meadows Bldg., Dallas, Tex. 75206
Filed July 17, 1972, Ser. No. 272,445
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D

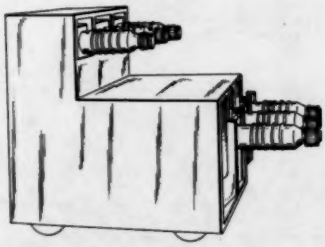
227,471
CALCULATING MACHINE
Mititaka Yamamoto, Kyoto, Koichi Yaida, Osaka, and Hisashi Maeda, Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto-shi, Japan
Filed Sept. 16, 1971, Ser. No. 181,279
Claims priority, application Japan Mar. 16, 1971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

227,472
ELECTRONIC CALCULATOR
Koji Hikawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 13, 1972, Ser. No. 243,916
Claims priority, application Japan Oct. 20, 1971
Term of patent 3½ years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

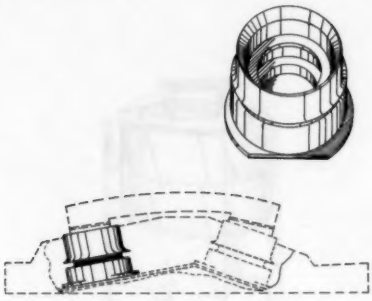
227,473
CALCULATOR
George J. Lampel, Los Angeles, Calif., assignor to Citizen America Corporation, Beverly Hills, Calif.
Filed June 5, 1972, Ser. No. 260,054
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

227,474
FLUORESCENT LAMP HEAD
James F. Sullivan, Eastchester, N.Y., assignor to Kulka Electric Corp., Mount Vernon, N.Y.
Filed Mar. 16, 1972, Ser. No. 235,465
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8

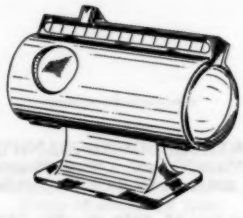
227,475
LOW PROFILE HIGH-VOLTAGE, TRUCK-MOUNTED CIRCUIT BREAKER WITH STAGGERED TERMINALS, OR THE LIKE
Philip C. Netzel, Milmont Park, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed June 26, 1972, Ser. No. 266,484
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



227,476
CUP FOR AN ACOUSTICAL COUPLER
John P. Kennedy, 2198 Woodstock Road, Columbus, Ohio 43221
Filed Sept. 9, 1971, Ser. No. 179,253
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

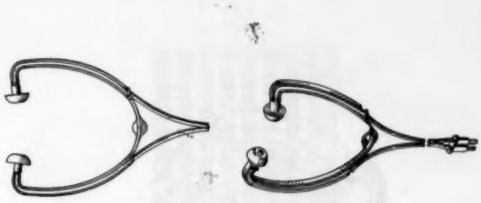


227,477
TELEPHONE DIRECTORY DEVICE
Alwin John Stahel II, New Brighton, Minn., assignor to The Holes-Webay Co., St. Cloud, Minn.
Filed Aug. 14, 1972, Ser. No. 280,154
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

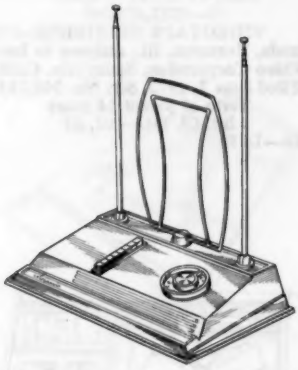


227,478
LOUD SPEAKER
Hans Ingvar Ekdahl, Staffanstorp, and Sten Egon Oskar Olofsson, Malmo, Sweden, assignors to Handelsbolaget Under Firma Handels-Och Konsultfirman Ekdahl & Olofsson, Malmo, Sweden
Filed Oct. 26, 1971, Ser. No. 192,689
Claims priority, application Sweden Apr. 27, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14.6

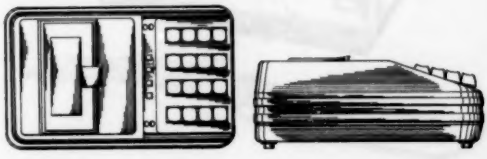
227,479
SOUND TUBE HEAD SET
Thomas Albert Scanlon, Barrington, R.I., assignor to Avid Corporation, East Providence, R.I.
Filed Feb. 28, 1972, Ser. No. 230,198
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 H



227,480
INDOOR TELEVISION ANTENNA
John Franzone, 2301 York Road, Lutherville-Timonium, Md. 21093
Continuation-in-part of abandoned design applications Ser. Nos. 149,875, 149,876 and 149,877, all June 3, 1971. This application July 21, 1972, Ser. No. 242,866
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 F

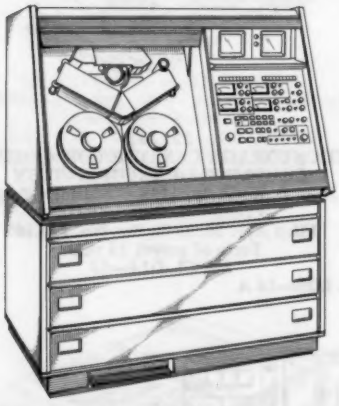


227,481
DATA STORAGE CASETTE FOR ACOUSTIC COUPLING OF INFORMATION
John P. Kennedy, 2198 Woodstock Road, Columbus, Ohio 43215
Filed Apr. 20, 1972, Ser. No. 246,109
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



227,482
TELEPHONE INSTRUMENT
Ronald Binks, Chambersburg, Pa., assignor to Global Systems Design Corporation, Chambersburg, Pa.
Filed May 30, 1972, Ser. No. 258,212
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

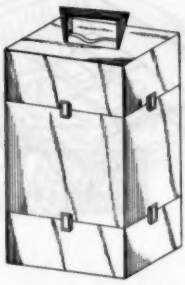
227,483
VIDEOTAPE RECORDER
Hari Matsuda, Evanston, Ill., assignor to International Video Corporation, Sunnyvale, Calif.
Filed June 7, 1972, Ser. No. 260,715
Term of patent 14 years
Int. Cl. D14—*01, 02*
U.S. Cl. D26—14 B

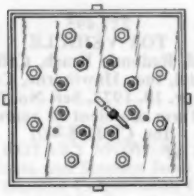


227,484
PORTABLE SOUND MANIFOLD
Alan French, Warwick, and Arthur Edward Pryde, Providence, R.I., assignors to Avid Corporation, East Providence, R.I.
Filed July 13, 1972, Ser. No. 271,372
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 G

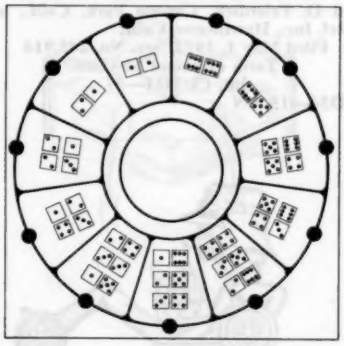
227,485
PORTABLE SOUND MANIFOLD
Alan French, Warwick, and Arthur Edward Pryde, Providence, R.I., assignors to Avid Corporation, East Providence, R.I.
Filed July 13, 1972, Ser. No. 271,573
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 G

227,486
PORTABLE SOUND MANIFOLD
Alan French, Warwick, and Arthur Edward Pryde, Providence, R.I., assignors to Avid Corporation, East Providence, R.I.
Filed July 31, 1972, Ser. No. 276,760
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 G

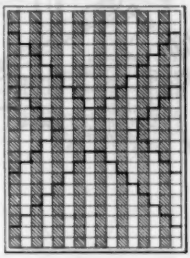




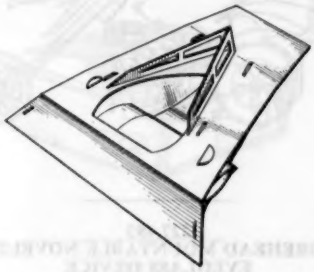
227,487
GAME BOARD
Stephen Corey, 6258 Rhodes, St. Louis, Mo. 63109
Filed Sept. 2, 1971, Ser. No. 177,533
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



227,488
GAME BOARD OR A SIMILAR ARTICLE
Samuel M. Spencer, 10147 Rustic Lane 45215, and James R. Davis, 8725 Hood Court 45231, both of Cincinnati, Ohio
Filed Apr. 21, 1972, Ser. No. 246,519
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS

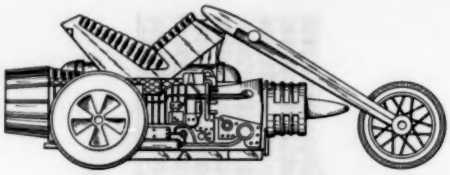


227,489
CHILD'S ROCKING TOY
Ron J. Lenius, 422 Vernon St., Oakland, Calif. 94610
Substituted for abandoned design application Ser. No. 22,730, Apr. 30, 1970. This application Sept. 7, 1972, Ser. No. 286,875
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 D

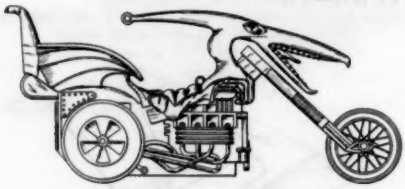


227,490
SKI
Irving Leonard Kaplan, Cleveland Heights, Ohio, assignor to Skijor Manufacturing Company, Cleveland, Ohio
Filed June 21, 1971, Ser. No. 155,410
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 D

227,491
TOY MOTORCYCLE
Robert B. Lovejoy, Hermosa Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Aug. 7, 1972, Ser. No. 278,686
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

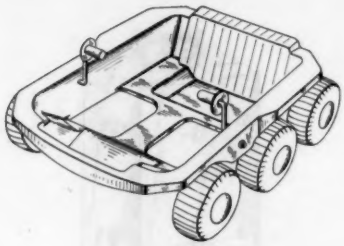


227,492
TOY MOTORCYCLE
Larry R. Wood, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Aug. 7, 1972, Ser. No. 278,687
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



227,493
FOREHEAD MOUNTABLE NOVELTY EYEGLASS DEVICE
Orben M. Lindley, P.O. Box 3485, Pensacola, Fla. 32506
Filed June 10, 1971, Ser. No. 152,017
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A

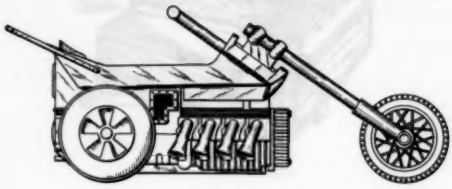
227,494
CHILD'S RIDING VEHICLE
Laurie J. Campbell and Robert T. Auer, Erie, Pa., assignors to Louis Marx & Co., Inc. (Delaware), New York, N.Y.
Filed Mar. 13, 1972, Ser. No. 234,445
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



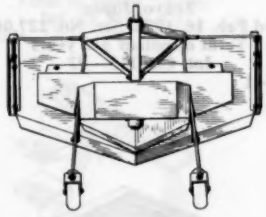
227,495
TOY VEHICLE
Larry R. Wood, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Apr. 19, 1972, Ser. No. 245,686
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

227,496
FIGURE TOY VEHICLE
Adolph E. Goldfarb, Tarzana, Delmar K. Everitt, Woodland Hills, Ronald F. Chesley, La Crescenta, and Richard D. Frierdich, Canoga Park, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed May 1, 1972, Ser. No. 248,914
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN

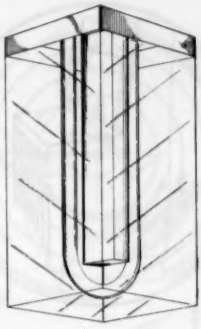
227,497
TOY MOTORCYCLE
Robert B. Lovejoy, Hermosa Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Aug. 7, 1972, Ser. No. 278,685
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



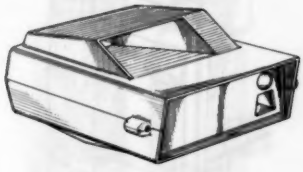
227,498
ROTARY MOWER
James Edson McCanse and Stephen John Gecan, Oregon, Ill., assignors to Hesston Corporation, Hesston, Kans.
Filed May 22, 1972, Ser. No. 255,958
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 B



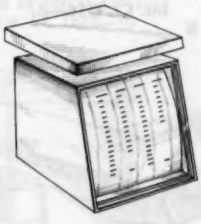
227,499
CEILING MOUNTED FLUORESCENT FIXTURE
Ernest Monte, Pasadena, Calif., assignor to Sunbeam Lighting Co., Los Angeles, Calif.
Filed June 24, 1971, Ser. No. 156,576
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 A



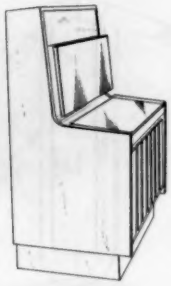
227,500
ELECTRONIC THERMOMETER
Stephens N. Sato, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Feb. 22, 1972, Ser. No. 228,437
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7 R



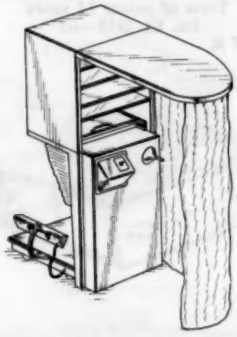
227,501
SCALE
Dana Warren Mox, Glenview, Ill., assignor to Hanson Scale Company, Chicago, Ill.
Filed July 10, 1972, Ser. No. 270,447
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—10 R



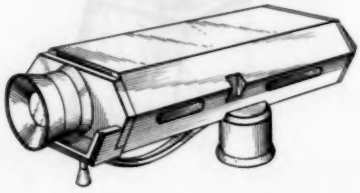
227,502
PHONOGRAPH OR SIMILAR ARTICLE
Wilhelm Menke, Schillerstr. 1, Bingen (Rhine), Germany
Filed Dec. 31, 1968, Ser. No. 15,158
Claims priority, application Germany Oct. 10, 1968
Term of patent 7 years
Int. Cl. D14—*01*
U.S. Cl. D56—4



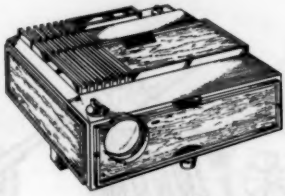
227,503
MOBILE PHOTOCOPY CAMERA UNIT
Gary E. Raymond, P.O. Box 531, Kenvil, N.J. 07847
Filed Oct. 20, 1971, Ser. No. 190,964
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



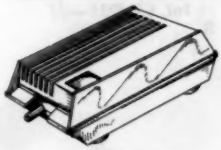
227,504
CASING FOR A CAMERA OR THE LIKE
Paul Wentworth Lang, Hollywood, Calif., assignor of a fractional part interest to Michael H. Du Pont, Los Angeles, Calif.
Filed Feb. 22, 1972, Ser. No. 228,454
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



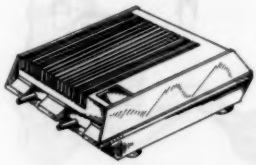
227,505
SLIDE PROJECTOR
Gerald J. Frey, Suite 202, 3887 State St., Santa Barbara, Calif. 93105
Filed July 17, 1972, Ser. No. 272,453
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 J



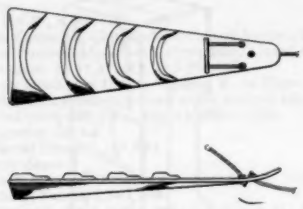
227,506
AIR-PUMP FOR AN AQUARIUM OR THE LIKE
Ryozo Kondo, 19–5 Ikegami 1-chome, Ota-ku, Tokyo, Japan
Filed Feb. 16, 1972, Ser. No. 226,997
Term of patent 3½ years
Int. Cl. D15—*02*
U.S. Cl. D65—1



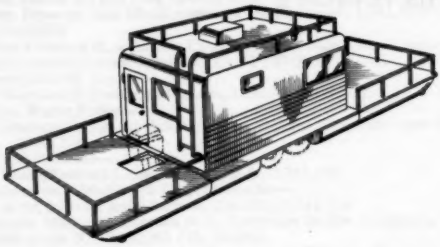
227,507
AIR-PUMP FOR AN AQUARIUM OR THE LIKE
Ryozo Kondo, 19–5 Ikegami 1-chome, Ota-ku, Tokyo, Japan
Filed Feb. 16, 1972, Ser. No. 227,000
Term of patent 3½ years
Int. Cl. D15—*02*
U.S. Cl. D65—1



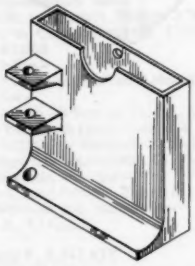
227,508
WATER SCOOTERS
Jack R. Bedient, 55 Richardson Drive, Henderson, Nev. 89015
Filed June 8, 1971, Ser. No. 151,164
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D71—1 CC



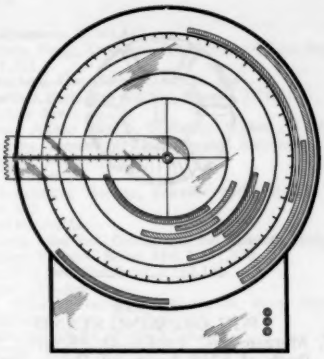
227,509
CONVERTIBLE HOUSEBOAT-CAMPING TRAILER
Barvo N. Walker, 4004 Argus St., Fort Worth, Tex. 76116
Filed June 1, 1972, Ser. No. 258,930
Term of patent 14 years
Int. Cl. D12—*06, 10*
U.S. Cl. D71—1 V



227,510
HOLDER FOR A PEN AND PAPER
Anthony J. Pisciotto, 10439 W. Medill Ave., Melrose Park, Ill. 60164
Filed June 1, 1972, Ser. No. 258,948
Term of patent 7 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A



227,511
MEDICAL INDICATING DEVICE
Arseny W. Spilewsky and Julius C. Kerekes, Los Angeles, Calif., assignors to Intermed Inc.
Filed Apr. 24, 1972, Ser. No. 247,224
Term of patent 14 years
Int. Cl. D24—*99*; D10—*99*
U.S. Cl. D83—1 R



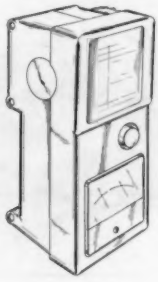
227,512
BABY BOTTLE
Phillip V. Kantz, Skokie, Ill., assignor to The Kendall Company, Boston, Mass.
Filed June 28, 1972, Ser. No. 266,870
Term of patent 14 years
Int. Cl. D24—*04*; D9—*01*
U.S. Cl. D83—8 A

227,513
BABY BOTTLE HOLDER
Roland Edward Lievendag, 100 SW. 12th Ave., Boca Raton, Fla. 33432
Filed Aug. 9, 1971, Ser. No. 170,424
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—8 R

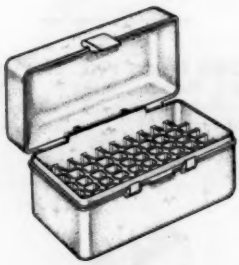
227,514
ELECTRO-SURGICAL HANDLE
Eugene Olsen, Lafayette, Calif.
(3820 Broadway, Oakland, Calif. 94611)
Filed Feb. 22, 1972, Ser. No. 228,429
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12

227,515
WIG DRESSING STAND
John T. Mergens and Paulita D. Mergens, San Diego, Calif. (both of 9250 Kenwood Drive, Spring Valley, Calif. 92114)
Filed July 23, 1971, Ser. No. 165,871
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 A

227,516
PORTABLE WATER TEMPERATURE SENSING AND REMOTE READOUT UNIT
Robert F. Turner, El Paso, Tex., assignor to Jetco Electronic Industries, Inc., El Paso, Tex.
Filed Feb. 4, 1972, Ser. No. 223,805
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7 R



227,517
AMMUNITION BOX
William J. Minneman, Montgomery County, Ohio
(Crestway Drive, Clayton, Ohio 45315)
Filed Apr. 5, 1971, Ser. No. 131,590
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



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TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF JUNE, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See*—
Mitchell, Hal D., 3,740,763.

Aakalu, Nanda Kumar G.; Chu, Richard C.; and Simons, Robert E., to International Business Machines Corporation. Liquid encapsulated air cooled module. 3,741,292, Cl. 165-105.000.

Abbott, Andrew Doyll; and Liston, Thomas V., to Chevron Research Company. Basic alkylene amine and sulfur bridged alkylphenoxides for use in lubricating oils. 3,741,896, Cl. 252-42.700.

Abbott Laboratories: *See*—
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Abe, Nobuyoshi: *See*—
Fujii, Fumio; Kurahara, Koji; Igata, Akitoshi; Abe, Nobuyoshi; and Yamamoto, Tetsuo, 3,741,994.

Abramson, Stanley L. Roof gutter and protector. 3,741,398, Cl. 210-474.000.

Abu-Isa, Ismat A.; and Eldred, Roger J., to General Motors Corporation. Surface treatment of polyurethane for plating. 3,741,881, Cl. 204-30.000.

Abu-Shumays, Ahmad; and Duffield, Jack J., to Cary Instruments; a wholly owned subsidiary of Varian Associates. Conversion of circular dichroism spectropolarimeter to linear dichroism measurement mode. 3,741,660, Cl. 356-114.000.

Accurate Manufacturing Co.: *See*—
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Bordeaux, Jean, 3,741,009.
Casey, Edward H., 3,741,008.

Acker, Noel T.; and Radice, John G., to Singer Company, The. Gear shift mechanism. 3,740,870, Cl. 35-11.000.

Acton, Daniel D.; and Foss, George J., to Anchor Hocking Corporation. Press-on twist lift-off container sealing means. 3,741,423, Cl. 215-40.000.

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Adams, Ladd M.: *See*—
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Adams, Walter P.: *See*—
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Addressograph-Multigraph Corporation: *See*—
Maul, John A.; and Anderson, David D., 3,741,114.

Adegeest, Marco, to Corodex N.V. Apparatus for the purification of waste water. 3,741,392, Cl. 210-180.000.

Adler, Karl; and Duconnum, Georges, to Biviator SA, mesne. Timepiece comprising a nuclear power source. 3,740,941, Cl. 58-23.0ba.

Adler, Leonard: *See*—
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Advanced Technology Center, Inc.: *See*—
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Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
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Ahern, William W., to Geometrics, Inc. Flexible structural panel. 3,740,903, Cl. 52-81.000.

A.I. Welders Limited: *See*—
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Aichenegg, Paul C.: *See*—
Emerson, Carl D.; and Aichenegg, Paul C., 3,742,046.

Ainoura, Masato, to Tsukihosh Gomu Kabushiki Kaisha and Kabushiki Kaisha Kashifuji Tekkosho. Method of honing gear teeth with a resilient worm-shaped hone. 3,740,904, Cl. 51-287.000.

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Mascioli, Rocco L.; and Petrella, Robert G., 3,741,893.

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Airco, Inc.: *See*—
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Smith, Francis E., 3,741,456.

Airrigation Engineering Company, Inc.: *See*—
Horne, Frederick F., 3,741,807.

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Ando, Masamoto, 3,741,612.
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AKG Akustische u. Kino-Gerate G.m.b.H.: *See*—
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Akiba, Keiichiro: *See*—
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Akiyama, Yoshinori: *See*—
Usui, Keizaburo; Haruna, Takashi; and Akiyama, Yoshinori, 3,741,583.

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Aktiengesellschaft Brown, Boveri & Cie: *See*—
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Akulov, Nikolai Sergeevich. Method for calibrating instruments designed to gauge the thickness of non-magnetic coatings on metal products and attachment for the realization of this method. 3,740,998, Cl. 73-1.00a.

Akulova, Galina Iosifovna: *See*—
Shindelman, Jury Iosifovich; Akulova, Galina Iosifovna; Snitka, Galina Grigorievna; Vasyagin, Nikolai Ivanovich; and Tyabirdin, Vladimir Vasilievich, 3,742,278.

Alajouanine, Remi F., to Forges et Ateliers de Meudon. Fluid-operated percussion tool. 3,741,316, Cl. 173-107.000.

Alberti, John; and Manninga, William W., to Boeing Company, The. Cargo handling system. 3,741,504, Cl. 244-137.00r.

Alberti, John, to Boeing Company, The. Cargo handling system side locking device. 3,741,508, Cl. 248-119.00r.

Albrecht, Francis E.; Baxter, William D.; De Michiel, John; Duggan, Robert J.; Greenblum, Carl; Grosky, Stephen A.; and Langer, Arthur, to Bunker-Ramo Corporation. Raster control device for controlling the positioning of the raster at the beginning of eachnew line. 3,742,288, Cl. 315-18.000.

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Albright, Jay Donald: *See*—
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Alburn, Harbey E.; and Dvonch, William, to American Home Products Corporation. Amidinourfido cycloaliphatic penicillins. 3,741,960, Cl. 260-239.100.

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Reynolds, Maurice Alfred; and Elkington, Ronald William, 3,741,827.

Alcott, Frederick S. Exhaust combustion system. 3,741,730, Cl. 23-277.00c.

Alfa-Laval AB: *See*—
Kjellgren, Ove Allan Valentin, 3,741,467.
Stenstrom, Lennart Arvid, 3,741,563.

Alimanshofer, Robert Dale, to RCA Corporation. Amplitude control circuits. 3,742,126, Cl. 178-5.40r.

Allais, Andre; Meier, Jean; and Dube, Jacques, to Roussel-UCLAF. Novel benzoylphenylacetic acid esters. 3,741,988, Cl. 260-340.900.

Allan, Donald R.: *See*—
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Allegheny Ludlum Steel Corporation: *See*—
Harbaugh, Samuel S.; and Rockwell, Perry M., 3,741,557.

Allen, Daniel D. Method of isostatically pressing metal powder into desired metal shapes. 3,741,755, Cl. 75-214.000.

Allied Chemical Corporation: *See*—
Beller, Herbert R., 3,741,496.
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Weedon, Gene C.; and Little, Edwin D., 3,741,966.

Allied Machine Works, a division of Buckeye Supply Co.: *See*—

Moyer, Carl W., 3,741,519.
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Sireren, Gerald E.; and Hansen, Kenneth N., 3,741,356.
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Alloway Manufacturing Inc.: *See—*
Eisenhardt, Fred W., 3,741,137.
Alperin, Joel M.; and Murphy, James P., to Philadelphia College of Textiles and Science. Material thickness detector. 3,741,054, Cl. 83-80.000.
Alside Inc.: *See—*
Mollman, Robert E., 3,740,915.
Altermatt, Ruedi, to Sandoz Ltd. Monoazo and disazo compounds having a nitroanilinosulfonyloxy-phenyl group. 3,741,954, Cl. 260-205.000.
Alting-Mees, Hemmo Reint: *See—*
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Aluminum Company of America: *See—*
Blake, George H.; and Clowes, Ernest J., 3,740,997.
Diekhoff, Hans H.; and Schrecker, Howard D., 3,741,141.
Amano, Hiroyuki; Iwano, Haruhiko; and Hatano, Tadao, to Fuji Photo Film Co., Ltd. Rapid color reversal photographic developing process. 3,741,763, Cl. 96-22.000.
Ambrose, Alwin W.; and Parker, Joseph W., III, to Combustion Engineering, Inc. Washing and purging apparatus for liquid seals. 3,741,235, Cl. 197-238.000.
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Anbar, Michael, to Stanford Research Institute. Methods and apparatus for the pollution-free generation of electrochemical energy. 3,741,809, Cl. 136-86.00a.
Anchor Hocking Corporation: *See—*
Acton, Daniel D.; and Foss, George J., 3,741,423.
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Anderson, Eugene A. Register bar for printing press sheet conveyors. 3,741,536, Cl. 271-48.000.
Anderson, George B., to USM Corporation. Cutting tool. 3,741,049, Cl. 82-37.000.
Anderson, Herbert S., to Anaconda Wire and Cable Company. Filtering apparatus. 3,741,389, Cl. 210-77.000.
Anderson, John W.; and Cavote, Donald R., to Wheeling-Pittsburgh Steel Corporation. Metal consolidation. 3,741,756, Cl. 75-223.000.
Anderson, Richard Edwin; and Swanson, Harry Gustav, to General Electric Company. Miniature, bearingless tachometer generator with wedge coupling for rigidly attaching the rotor to the drive shaft. 3,742,264, Cl. 310-42.000.
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Apodesta, Dorothy; Cardillo, Judy I.; Eisele, Nancy E.; Fox, Eileen; and Nesler, Margaret L., to Harcourt Brace Jovanovich, Inc. Method of making multi-color slide transparencies with superimposed images. 3,741,649, Cl. 355-88.000.
Appel, Hansgunter: *See—*
Ullrich, Martin; Erdmenger, Rudolf; Kunze, Heinrich; Nothen, Karl; Appel, Hansgunter; and Wingler, Frank, 3,741,272.
Applied Research Laboratories, Inc.: *See—*
Smallbone, Allan H., 3,742,226.
Aquaria, Inc.: *See—*
Louis, Anthony, 3,741,843.
Arai, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for inflating a safety bag for vehicle passengers. 3,741,584, Cl. 280-150.0ab.
Archer Daniels Midland Company: *See—*
Pour-El, Akiva; and Swenson, Thomas C., 3,741,771.
Argentar, Harold: *See—*
Bowen, Rafael L.; and Argentar, Harold, 3,740,850.
Argirakis, Robert: *See—*
Muniz, Raymond; and Argirakis, Robert, 3,741,333.
Argus Engineering Company, Inc.: *See—*
Costello, Bernard J., 3,742,181.
Arikawa, Masayasu; Ohi, Atsushi; Ihochi, Akihiko; and Hashimoto, Kenichiro, to Kobe Steel Ltd. Method and apparatus for automatic arc welding in a vertical position. 3,742,184, Cl. 219-126.000.
Arkush, Ellis John, Jr. Machine for applying accurates. 3,741,459, Cl. 227-3.000.
Arlington, Sterling F.; and Rahaim, Thomas J., to Westinghouse Electric Corporation. Cooling air profiling structures for a gas turbine. 3,741,678, Cl. 415-117.000.
Armorlite Lens Company, Inc.: *See—*
Nerad, Frank O., 3,740,857.
Armour and Company: *See—*
Wrobel, Raymond J.; and Rendek, Robert B., 3,741,777.
Armstrong, John Patrick; and Tennant, Melvin Alexander, to Perkin-Elmer Limited. Pulse generators. 3,742,373, Cl. 328-63.000.
Arni, Urs; Faucci, Adriano; and Stocker, August, to Lonza Ltd. Process for the production of malonic acid dinitrile and purification thereof. 3,742,020, Cl. 260-465.80r.
Aron, Francis J. Fish hook. 3,740,890, Cl. 43-37.000.
Arpajian, Vasken F.: *See—*
Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., 3,741,700.
Arpajian, Vasken F.; and White, Quentin M., to Pennwalt Corporation. Variable volume and controlled density forming mechanism for compression molding presses. 3,741,699, Cl. 425-145.000.

Arrow-Hart, Inc.: *See*—
Kobyner, Herman H., 3,742,431.
Arteburn, Royce L. Fishing weight clip. 3,740,803, Cl. 24-261.00r.
Arvin Industries, Inc.: *See*—
Ganske, Kingston E., 3,741,497.
Asahi Kaisei Kogyo Kabushiki Kaisha: *See*—
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Asahi Kasei Kabushiki Kaisha: *See*—
Komoto, Hiroshi; Hayano, Fusakazu; and Takami, Toshio, 3,742,049.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Kakutani, Tsutomu; Hirata, Tetsuhiko; Matsuda, Shogo; Inagaki, Kenji; and Innami, Hidetoshi, 3,741,857.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Nobusawa, Tsukumo, 3,741,088.
Asai, Harumi; and Yoda, Ryuichiro, to Japanese Geon Company, Ltd., The. Method for polymerization of epoxides. 3,741,916, Cl. 260-2.0ep.
Asano, Kumiji: *See*—
Kubo, Moritada; Asano, Kumiji; and Obama, Masao, 3,742,357.
Asberg, Sture, to SKF Industrial Trading and Development Company N.V. Driving gear assembly for a motor vehicle. 3,741,030, Cl. 74-424.000.
Ashe, Thomas A., to Du Pont de Nemours, E. I., and Company. Polyesters with terminal polyhydroxy groups. 3,741,941, Cl. 260-78.30r.
Ashland Oil Inc.: *See*—
Day, Donald T., 3,741,012.
Ashotovich, Robert: *See*—
Remensnikov, Alexandr Ilich; Vasiliev, Viktor Mikhailovich; and Ashotovich, Robert, 3,741,556.
Asscher, Meir: *See*—
Vofsi, David; and Asscher, Meir, 3,742,019.
Associated Packaging Inc.: *See*—
Carney, Henry B., 3,741,380.
Astra-Meditec AB: *See*—
Tillander, Hans, 3,741,214.
Astrophysics Research Corporation, mesne: *See*—
Van der Sande, Jan J.; and Deltrap, Johan H., 3,742,285.
Athey, Roy L.; and Moore, Joseph B., to United Aircraft Corporation. Processing for integral gas turbine disc/blade component. 3,741,821, Cl. 148-13.100.
Atlantic Richfield Company: *See*—
Eliason, Kay E.; and James, James R., 3,741,482.
Atlas Copco Aktiebolag: *See*—
Hilfing, Karl Erik, 3,741,320.
Attenburrow, John: *See*—
Looker, Brian Edgar; Attenburrow, John; and Wilson, Edward McKenzie, 3,741,959.
Audretsch, Leo M., Jr.; Bliss, Burtt E.; Dervan, James T., III; Elsner, Matthew; Griffith, Leroy E.; and Thorpe, Robert A., to International Business Machines Corporation. Selective polling of terminals via a sequentially coupled broadband cable. 3,742,452 Cl. 340-147.00r.
Aupoix, Marcel; and Moisson-Franckhauser, Francois, to Compagnie Generale d'Electricite. Transposed electric cable and method of producing the same. 3,742,116, Cl. 174-34.000.
Austin Company, The: *See*—
Cox, Arthur, 3,741,622.
Austin, Willis R., to Pfizer Inc. Fixture for molding and assembling viscid sticks. 3,740,810, Cl. 29-200.00p.
Auto Specialties Manufacturing Company: *See*—
Morgan, George H.; and Nehrig, Robert Harlan, 3,741,524.
Automatic Switch Company: *See*—
Kaemmer, Herbert H., 3,741,247.
Automation Industries, Inc.: *See*—
Posakony, Gerald J., 3,741,004.
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Magnier, Roger, 3,741,358.
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Avco Corporation: *See*—
Killmann, Irolt G.; and Matto, Lawrence R., 3,741,680.
Avery Products Corporation: *See*—
Torrey, John S., 3,741,786.
Avery, Ralph L., to Carborundum Company, The. Abrasive cable saw cutting member. 3,741,192, Cl. 125-21.000.
Awipi, Mebenin, to Bell Telephone Laboratories, Incorporated. Limited vocabulary speech recognition circuit for machine and telephone control. 3,742,143, Cl. 179-1.0sa.
Aya, Toshihiko: *See*—
Kiuchi, Hiroshi; Oshima, Keisuki; Nishidoi, Takashi; and Aya, Toshihiko, 3,742,090.
Ayad, Fouad Mohamed. Instrument used for circumcision Ayad's preputome. 3,741,215, Cl. 128-305.000.
Aylesworth, Albert Orser. Hydraulic controller for strip material feeder. 3,741,458, Cl. 225-145.000.
Baba, Masanao, to Nippon Cable System Inc. Single lever control apparatus for marine engine. 3,741,044, Cl. 74-876.000.
Baba, Nobuyoshi, to Asahi Kaisei Kogyo Kabushiki Kaisha. Method for producing composite metallic pipe by explosion pressure welding. 3,740,826, Cl. 29-470.100.
Babcock & Wilcox Company, The: *See*—
Rudd, Alexander H.; Hansen, Walter A.; and Ingersoll, James E., 3,741,174.
Babusci, Daniel; and Unger, Burton Abram, to Bell Telephone Laboratories, Incorporated. Method of reducing the incidence of short circuits in air-isolated beam crossovers. 3,740,819, Cl. 29-401.000.
Bacha, John D.; and Selwitz, Charles M., to Gulf Research & Development Company. Conversion of chloroaromatics to meta derivatives beyond equilibrium. 3,742,073, Cl. 260-650.00r.
Bachner, Ernst; and Fortner, Walter, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Process for continuously operating a continuous casting plant. 3,741,277, Cl. 164-82.000.
Badalich, Frank C.; and Watterlohn, Roy H., to Bell & Howell Company. Filmstrip projector with synchronized sound. 3,742,323, Cl. 318-467.000.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See*—
Distler, Harry; and Widder, Rudi, 3,741,998.
Osieka, Hans; Kiefer, Hans; and Fischer, Adolf, 3,742,007.
Wittmer, Paul; Becht, Geunter; and Doerfel, Helmut, 3,741,939.
Bahr, Alfred J.; and Podell, Allen F., to Stanford Research Institute. Grating surface acoustic wave transducer. 3,742,396, Cl. 333-30.000.
Baier, Frederick L.; and Ancker, Fred H., to Union Carbide Corporation. Metal plated plastics. 3,741,800, Cl. 117-138.80e.
Bailey, Frank W. Blue flame retention gun burners and heat exchanger systems. 3,741,166, Cl. 122-23.000.
Baker, Donald J., to Bendix Corporation, The. Collapsible steering column assembly. 3,741,032, Cl. 74-492.000.
Baker, Ethelbert J., Jr.: *See*—
Mallow, William A.; Owen, Richard A.; and Baker, Ethelbert J., Jr., 3,741,898.
Baker, Hugh M., Jr.; and Genter, Roland E., to H B Engineering Corporation. Data retrieval means having multiple position switches. 3,742,454, Cl. 340-151.00r.
Baker Oil Tools, Inc.: *See*—
Leutwyler, Kurt, 3,741,249.
Baker, Theodore C., to Owens-Illinois, Inc. Method of strengthening glass. 3,741,739, Cl. 65-30.000.
Baldwin, Charles R.: *See*—
Sweet, Bill M.; Hundeby, Gary T.; and Baldwin, Charles R., 3,740,880.
Baldwin, John Lewis Edwin, to Independent Television Authority. Television systems. 3,742,135, Cl. 178-6.800.
Ball Brothers Research Corporation: *See*—
Munson, Robert E., 3,742,512.
Ballard, Albert S. Sealable electrical connector. 3,742,427, Cl. 339-60.00m.
Ballis, William L.: *See*—
Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; Hutt, Bruce L.; Chew, Charles R.; and Hall, Arthur M., 3,741,457.
Balon Corporation: *See*—
Scaramucci, Domer; and Adams, Ladd M., 3,741,523.
Ban, Ituki. Tape fast feed control apparatus for endless magnetic tape cartridge player. 3,742,320, Cl. 318-6.000.
Banks, Robert, to Nuclear Power Group Limited, The. Nuclear reactors. 3,741,349, Cl. 188-42.000.
Barber-Greene Company: *See*—
Farnham, Robert E.; Prill, Fredric W.; Smith, Donald W.; and Plociennik, James L., 3,741,532.
Patsch, Thomas E.; and Farnham, Robert E., 3,742,307.
Barkan, Robert G. Guitar-like electronic musical instrument using resistor strips and potentiometer means to activate tone generators. 3,742,114, Cl. 84-1.160.
Barnes, Donnie G. Ladder support spacer. 3,741,510, Cl. 248-229.000.
Barnes Engineering Company: *See*—
Spielberger, Seynour C., 3,742,231.
Barodyne, Inc.: *See*—
Silvern, David Harold; and Minton, Stanley J., 3,741,676.
Silvern, David Harold; and Minton, Stanley J., 3,741,677.
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Barratt, Robert O.: *See*—
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Barratt, Robert O., to Foster Wheeler Corporation. Sodium-heated steam generator. 3,741,164, Cl. 122-32.000.
Barrett, John H., Jr., to Purex Corporation, Ltd. Laundry prespotter composition. 3,741,902, Cl. 252-90.000.
Barthelemy, Pierre: *See*—
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BASF Wyandotte Corporation: *See*—
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Bassoff, Arthur B.: *See*—

Bregi, Benjamin F.; Motz, Carl H.; and Bassoff, Arthur B., 3,740,987.
Battelle Memorial Institute: *See—*
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Bauer, Peter, to Bowles Fluidics Corporation. Shower spray. 3,741,481, Cl. 239-102.000.
Bauerle, Mathias, GmbH: *See—*
Raible, Hermann, 3,742,244.
Bauman, Donald Lee, to Du Pont de Nemours, E. I., and Company. Quaternary styryl dyestuffs. 3,742,012, Cl. 260-465.00d.
Baumann, Frederick W.; Smith, William R.; MacNary, Robert G.; Miller, Albert R.; Pangburn, William W.; Rosenberry, George M., Jr.; and Kaczkowski, Bernard C., to General Electric Company. Automated method of manufacturing finned machine frames. 3,741,278, l. 164-114.000.
Baumann, Frederick W.; La Bahn, William C.; MacNary, Robert G.; and Miller, Albert R., to General Electric Company. Dismemberable mold for centrifugally casting finned structures. 3,741,707, Cl. 425-435.000.
Baxter, William D.: *See—*
Albrecht, Francis E.; Baxter, William D.; De Michiel, John; Duggan, Robert J.; Greenblum, Carl; Grosky, Stephen A.; and Langer, Arthur, 3,742,288.
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Mayer-Mader, Rudolf; and Dinges, Karl, 3,742,075.
Ullrich, Martin; Erdmenger, Rudolf; Kunze, Heinrich; Nothen, Karl; Appel, Hansgunter; and Wingler, Frank, 3,741,272.
Baylis, John Harold; and Bond, Anthony John, to Ilford Limited. Photographic emulsions containing alkali metal ferricyanides. 3,741,767, Cl. 96-94.000.
Baynes, William R.; and Larsson, Ake L., to Mattel, Inc. Sequential phonograph toy. 3,741,566, Cl. 274-9.00r.
Bean, Frank J.; and Sheridan, John F. Lens circumference measuring instrument. 3,740,855, Cl. 33-141.00e.
Beasley, Donald L., to Townsend Engineering Company. Stripper means for meat skinning machines. 3,741,105, Cl. 99-589.000.
Beasley, Maurice Trevor, to Lucas, Joseph, (Industries) Limited. Apparatus for hot runner injection moulding. 3,741,704, Cl. 425-245.000.
Beaucaire, Victor D.: *See—*
Patton, Richard S.; Keyser, Naaman H.; Langdon, Vernon L.; Beaucaire, Victor D.; and Marlin, Louis A., 3,740,859.
Beauregard, Rejean; and Cote, Yvon, to Bombardier Limited. Retractable head lamp assembly. 3,742,205, Cl. 240-7.10h.
BEC Products, Inc., mesne: *See—*
Dageford, Ernest C., 3,742,303.
Becht, Geunter: *See—*
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Bechter, Max: *See—*
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Beck, David Walter. Boat ventilator. 3,741,100, Cl. 98-37.000.
Becke, Theobald: *See—*
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Becker, Harold D., to Datel Corporation. Ribbon shift assembly. 3,741,364, Cl. 197-151.000.
Becker, James F., to Beloit Corporation, Downingtown Division. Retractable overhead crimper. 3,740,924, Cl. 53-380.000.
Beckman Instruments, Inc.: *See—*
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Becton, Dickinson & Company: *See—*
Folus, Stanford G., 3,742,187.
Becton, Dickinson and Company: *See—*
Stanfield, Trevelyan A., 3,741,732.
Beden, Moses. Valve. 3,741,228, Cl. 137-614.200.
Bedford, Burnice D., to General Electric Company. Versatile cycloinverter power converter circuits. 3,742,336, Cl. 321-69.00r.
Beears, Warren L., to Goodrich, B. F., Company, The. N,N'-alkylenebis [β-(alkyl-carboxyalkylthio) propionamides]. 3,742,032, Cl. 260-481.00r.
Begun, Robert A.: *See—*
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Behymer, Donald J., to Textron, Inc. Auditory training device with radio receiver and hearing aid. 3,742,359, Cl. 325-26.000.
Bell & Howell Company: *See—*
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Bell, Jeffrey L.: *See—*
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Bell, Kenneth B.; Brutt, Frederick J.; and Mazanek, Alfonso J., to Westinghouse Electric Corporation. Rotary type grounding switch. 3,742,158, Cl. 200-1.00g.
Bell, Robert Graham; Collins, James Edward; and Griffiths, Gwylfa George, to National Standard Company Limited. Manufacture of bead wires for tyres. 3,741,262, Cl. 140-92.200.
Bell, Stanley C. 2-Hydroxyacetamidobenzophenone esters. 3,742,009, Cl. 260-456.00a.
Bell Telephone Laboratories, Inc.: *See—*
Buck, Robert Grainger; Deltuvia, John Joseph, Sr.; and Spinks, Albert Hunter (said Deltuvia and said Spinks assors. to), 3,742,155.
Bell Telephone Laboratories, Incorporated: *See—*
Awipi, Mebenin, 3,742,143.
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Brandenburg, Lane Howard; Gopinath, Bhaskarpillai; and Kurshan, Robert Paul, 3,742,144.
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Kahn, Frederic Jay, 3,741,629.
Koppes, David Nelson, 3,740,790.
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Ruether, Peter Gade, 3,742,151.
Saleh, Adel Abdel Moneim, 3,741,625.
Smith, Peter William, 3,742,382.
Weller, David Reis, 3,742,450.
Bellasio, Elvio, to Gruppo Lepetit S.p.A. Phthalazine derivatives. 3,741,967, Cl. 260-250.00a.
Bellemare, Gregoire. Device for straightening bulged ends of railroad cars. 3,741,029, Cl. 72-419.000.
Beller, Herbert R., to Allied Chemical Corporation. Safety seat belt retractor. 3,741,496, Cl. 242-107.400.
Belli, Frank G.: *See—*
Ciccarelli, Roger N.; Seldin, Ira L.; and Belli, Frank G., 3,741,759.
Beloit College: *See—*
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Bennett, William A.: *See—*
Lee, Lewis R.; Whybro, Robert S. D.; and Bennett, William A., 3,741,415.
Benninghoven, Alfred, to Bayer Aktiengesellschaft. Process and apparatus for the mass spectrometric analysis of surfaces of solids. 3,742,227, Cl. 250-49.50p.
Benrud, Vernal M.; and Horst, Richard L., to Sperry Rand Corporation. Sense-digit line selection matrix for memory system. 3,742,467, Cl. 340-174.0rc.
Benson, Wilfred Y.; and Andrews, James T., to Mohawk Data Sciences Corporation. Type carrier assembly. 3,741,109, Cl. 101-93.00c.
Bentley, Ralph C.; and Burroughs, James R., to Voplex Corporation. Box having a carrying handle-latch. 3,741,433, Cl. 220-55.700.
Berezin, Leonid Georgievich: *See—*
Kozheurov, Vsevolod Rodionovich; Berezin, Leonid Georgievich; Safarov, Georgy Samuilovich; and Bulgakov, Petr Lavrentievich, 3,741,280.
Berger, Julius, to Berger, Julius, Firma. Lawn cutting device in particular lawn edge cutter. 3,740,936, Cl. 56-246.000.
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Bergerhoff, Klaus-Peter; and Becke, Theobald, to Demag Aktiengesellschaft. Shelf loader for long materials. 3,741,419, Cl. 214-730.000.
Bergevin, Charles R. Spring-coiling machine. 3,740,984, Cl. 72-30.000.
Bergh, George G.; and Bergh, Robert G. Container. 3,741,430, Cl. 220-38.000.
Bergh, Robert G.: *See—*
Bergh, George G.; and Bergh, Robert G., 3,741,430.
Bergman, Kjell; and Dybvig, Arne, to Allmanna Svenska Elektriska Aktiebolaget. Method and apparatus for stabilizing multiple motor driven systems. 3,742,321, Cl. 318-99.000.
Bergum, Bernard C.; and Lonnebotn, Trygve, to ESB Incorporated. Battery having gas pervious, liquid impervious member sealed over hole in top. 3,741,813, Cl. 136-107.000.
Berkowitch, John Emmanuel, to Du Pont de Nemours, E. I., and Company. Plexifilimentary cellulose strand. 3,740,940, Cl. 57-140.00r.
Bernard, Louis M., mesne: *See—*
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Berndt, Hans-Detlef; and Wiechert, Rudolf, to Schering, AG. Process for the preparation of pregnane derivatives. 3,741,997, Cl. 260-397.400.
Berne, Charles, to Edwards Company Inc. Audible signal apparatus. 3,742,493, Cl. 340-388.000.
Bernstein, Bernard J. Automatic gas torch. 3,741,708, Cl. 431-28.000.

Berrer, Dagmar; and Vogel, Christian, to Ciba-Geigy Corporation. Herbicidal 2-alkythio 4,6-diamino-s-triazines. 3,741,745, Cl. 71-93.000.

Berriman, Lester P., to Dresser Industries, Inc. Fluid compensator valve. 3,741,240, Cl. 137-483.000.

Berthiez, Charles William. Production of bodies of revolution. 3,741,070, Cl. 90-11.00c.

Berton, Roger J.; Daniel, Roger P.; and Reuter, Conrad N., to Ford Motor Company. Crash dummy viscous neck. 3,740,871, Cl. 35-17.000.

Besch, Alois Ruppert, to Bunker-Ramo Corporation, The. Apparatus for the operation of a tool. 3,741,562, Cl. 269-96.000.

Besson, A. P., & Partner Limited: *See*—
Lawson, Peter James; and Kocsis, Ferenc, 3,742,491.

Best, Theodore R., Jr. Apparatus for distillation of fluids. 3,741,879, Cl. 202-236.000.

Bethlehem Steel Corporation: *See*—
Young, Harold K.; Wald, Herbert; Blanch, William O.; and Meadows, Lacy C., 3,741,789.

Betz, Friedel: *See*—
Fries, Gunther K.; Oberhauser, Ernst-Gunther; and Betz, Friedel, 3,741,059.

Beuther, Harold; Chun, Sun W.; Hamilton, Harry A.; and McIlvried, Howard G., to Gulf Research & Development Company. Oxidative sweetening with a calcined cogelled composite of silica and iron salt impregnated with a copper salt. 3,741,888, Cl. 208-191.000.

Bevacqua, Peter V. Portable holder and saw blade guide slot for ridgedly camping and cutting flexible armored electrical cable at right angles to the cable axis. 3,741,061, Cl. 83-454.000.

Beydler, William W., to Westinghouse Electric Corporation. Pulse doppler moving-target radar. 3,742,499, Cl. 343-7.700.

Beyerlin, Hans-Peter, to Giegle, G., & Co., GmbH. Fluorescent pigments having an isocyanate resin base. 3,741,907, Cl. 252-301.20r.

Bialous, Charles A., to General Electric Company. Thermally stable polycarbonate composition. 3,742,083, Cl. 260-824.00r.

Bialous, Charles A., to General Electric Company. Thermally stable polycarbonate composition. 3,742,085, Cl. 260-827.000.

Bidlack, Richard Henry; McKelvey, William John; and Rezelman, James Alan, to Bell Telephone Laboratories, Incorporated. Continuous inband testing of trunks with automatic trunk substitution upon detecting a defective trunk. 3,742,154, Cl. 179-175.300.

Bienert, Klaus; Lang, Winfried; and Kremser, Fritz, to Wacker-Chemitronic Gesellschaft fur Elektronik Grundstoffe m.b.H. Process for producing monocrystals from III-V compounds melts with a boron oxide rim. 3,741,817, Cl. 148-1.600.

Bienert, Walter B.; and Trimmer, Donald S., to Sinclair & Valentine Company, Inc. Pressureless non-contact electrostatic printing. 3,741,117, Cl. 101-426.000.

Bier, Gerhard: *See*—
Schrott, Erwin; Bier, Gerhard; and Gumboldt, Albert Gustav Martin, 3,741,947.

Big Drum, Inc.: *See*—
Von Bredow, Hans D., 3,740,821.

Bilbow, Patrick J., to Lyn-Weld Company, Inc. Foam handling apparatus and method. 3,741,416, Cl. 42-152.000.

Bilhorn, John M., to ESB Incorporated. Battery having wrapper comprising laminates of metal and electrically conductive plastic. 3,741,814, Cl. 136-111.000.

Binard, William J.; and Dye, John F., to Kendall Company, The. Fenestrated drape. 3,741,206, Cl. 128-132.00d.

Binns, John W.: *See*—
Smith, Vernon O.; and Binns, John W., 3,740,978.

Biorex Laboratories Limited: *See*—
Turner, John Cameron; and Sleep, Michael Christopher (said Turner assor. to), 3,742,021.

Biquard, Pierre: *See*—
Lewiner, Jacques; and Biquard, Pierre, 3,742,152.

Bis, Tadeck Valentin. Device for centering disc records on the turntable of a record player. 3,741,567, Cl. 274-10.00s.

Bissett-Berman Corporation, The: *See*—
Jaeger, John E., 3,742,408.

Biviator SA, mesne: *See*—
Adler, Karl; and Duconnum, Georges, 3,740,941.

Black, La Donna Jeanne. Demonstration device for illustrating tooth structure and dental care. 3,740,854, Cl. 32-71.000.

Blades, Charles E., to Air Products and Chemicals, Inc., mesne. Telomers of vinyl alkanoates and a methyl substituted benzene compound. 3,742,037, Cl. 260-488.0cd.

Blagg, Leon. Trailer-borne horse corral. 3,741,529, Cl. 256-26.000.

Blair, Charles M., to Texas Instruments, Incorporated. Burst and single error detection and correction system. 3,742,449, Cl. 340-146.1al.

Blake, George H.; and Clowes, Ernest J., to Aluminum Company of America. Blankholding assembly. 3,740,997, Cl. 72-465.000.

Blalock, William L.; and Whitehurst, Marcus G., to Piedmont Machine Shop, Inc. Apparatus for preventing splitting of textile fiber laps. 3,740,796, Cl. 19-155.000.

Blanch, William O.: *See*—
Young, Harold K.; Wald, Herbert; Blanch, William O.; and Meadows, Lacy C., 3,741,789.

Blankenship, Milton O. Poultry handling system. 3,741,417, Cl. 214-314.000.

Blauvelt, Everet M.: *See*—
Le Sueur, Joel M.; and Blauvelt, Everet M., 3,741,193.

Blavos, Nicholas G.; Chi Lin, Kou; and Dobson, Le Roy E., to Westinghouse Electric Corporation. Electrical connector. 3,742,122, Cl. 174-94.00r.

Bleuer, Keith T. Razor cartridge and holder therefor. 3,740,842, Cl. 30-40.001.

Bliss, Burtt E.: *See*—
Audretsch, Leo M., Jr.; Bliss, Burtt E.; Dervan, James T., III; Elsner, Matthew; Griffith, Leroy E.; and Thorpe, Robert A., 3,742,452.

Blood, Raymond; and Marriott, Eric Walter, to William Cotton Limited. Straight bar knitting machines. 3,740,973, Cl. 66-88.000.

Bloom, Ray A.: *See*—
Walz, Heinrich; and Bloom, Ray A., 3,741,753.

Blower, Bernard F. Strong box and fixed anchorage and means for interconnecting and locking them together. 3,741,132, Cl. 109-52.000.

Blue, John, Company; a division of Subscription Television, Inc.: *See*—
Johnston, Douglas, 3,741,679.

Blumcraft of Pittsburgh: *See*—
Horgan, William J., Jr., 3,741,595.

Boatner, Lynn A., to Advanced Technology Center, Inc. Bolometric detector utilizing electron paramagnetic resonance. 3,742,235, Cl. 250-83.30h.

Bockhorn, Henning; Fetting, Fritz; Herbertz, Hans-Adolf; and Galdo, Norberto, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process and device for the production of acetylene-ethylene mixtures. 3,741,736, Cl. 48-113.000.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See*—
Spreitzhofer, Ernst, 3,742,202.

Boehly, Michael A.; and Kavanaugh, Paul K. Framing system for T-carrier telephony. 3,742,139, Cl. 178-69.50r.

Boehringer Ingelheim G.m.b.H.: *See*—
Hess, Fritz K.; Stewart, Patrick B.; Zeile, Karl; and Freter, Kurt, 3,741,951.
Koppe, Herbert; Engelhardt, Albrecht; Ludwig, Gerhard; and Zeile, Karl, 3,742,023.

Boeing Company, The: *See*—
Adams, Clarence R., 3,740,905.
Alberti, John; and Manninga, William W., 3,741,504.
Alberti, John, 3,741,508.

Boesch, Roger, to Rhone-Poulenc S.A. Substituted 3-[4-ureidophenyl]-1,3,4-oxadiazol-2-ones. 3,741,977, Cl. 260-307.00a.

Bofors (Gt. Britain) Company Limited: *See*—
Voyce, Terence Edward, 3,740,875.

Bogachev, Anatoly Vasilievich: *See*—
Sorokovsky, Vladislav Kazimirovich; Bogachev, Anatoly Vasilievich; and Kuznetsov, German Ivanovich, 3,740,899.

Bohanec, August. Camera strap retractor. 3,741,092, Cl. 95-86.000.

Boissier, Jacques Robert; and Ratouis, Roger, to Societe anonyme dite: Societe Industrielle pour la Fabrication des Antibiotiques (SIFA). 3,742,070, Cl. 260-615.00f.

Bolling, Gustaf F.: *See*—
Cole, Gerald S.; and Bolling, Gustaf F., 3,741,279.

Bombardier Limited: *See*—
Beauregard, Rejean; and Cote, Yvon, 3,742,205.

Bond, Anthony John: *See*—
Baylis, John Harold; and Bond, Anthony John, 3,741,767.

Bond, John W. Air venting device for a toilet. 3,740,771, Cl. 4-215.000.

Bond, Scott R.: *See*—
Boyd, John A.; Bond, Scott R.; Elliott, Ralph K.; Gisolfi, John J.; and Merkin, Eugene, 3,741,107.

Bonds, James V.: *See*—
Herd, David P.; Mc Caskill, John W.; and Bonds, James V., 3,741,589.

Bone, David Charles, to British Aluminium Company Limited, The. Heating of molten metal. 3,741,751, Cl. 75-65.000.

Bonvicini, Alberto; and Cantatore, Giuseppe, to Montecatini Edison S.p.A. Dye retentive olefin polymer compositions containing a basic polyamide. 3,741,930, Cl. 260-41.00c.

Boor, Francis H., to Fairfield Manufacturing Co. Speed reduction gear assembly. 3,741,041, Cl. 74-801.000.

Booth, John L. Method for producing continuous compressed honeycomb. 3,741,840, Cl. 156-197.000.

Bordeaux, Jean. Carburetor flow stand. 3,741,006, Cl. 73-118.000.

Bordeaux, Jean. Carburetor flow stand. 3,741,007, Cl. 73-118.000.

Bordeaux, Jean, to ACF Industries, Incorporated. Carburetor flow stand. 3,741,009, Cl. 73-118.000.

Bordenca, Carl, to SCM Corporation. Diisophorone derivatives and compositions containing same. 3,742,052, Cl. 260-566.00b.

Borel, Melvin J.: *See*—
Wilson, Jesse C.; Borel, Melvin J.; and Weaver, Charles B., 3,742,124.

Borsheim, Lewis A., to Petersen, Ross K. Air pre-cleaner. 3,740,932, Cl. 55-394.000.

Bort, Inc.: *See*—
Purcell, Jack A., Jr.; Leonard, Jerome A.; and Juratovic, John S., 3,741,429.

Bortoli, Ettore. Automatic brake for skis. 3,741,575, Cl. 280-11.13b.

Bosch, Hendrik: *See*—
Zihp, Jan W. H.; and Bosch, Hendrik, 3,742,109.

Bosch, Robert, G.m.b.H.: *See*—
Dautel, Wolfgang, 3,741,171.
Eckert, Konrad, 3,741,582.

Schmidt, Peter; and Raff, Lothar, 3,741,176.
Siegle, Gert, 3,742,280.
Siegle, Gert, 3,742,282.

Boschung, Marcel, to Boschung, Marcel, Firma. Snow clearers. 3,740,874, Cl. 37-43.000.

Boschung, Marcel, Firma: *See—*
Boschung, Marcel, 3,740,874.

Boshinski, Edwin E.; Clark, Walter W.; Riehl, Roger W.; and Watson, William M., to Hobart Manufacturing Company, The. Weighing scale with digital display. 3,741,324, Cl. 177-3.000.

Bossi, Hans Jurg, to Aktiengesellschaft Brown, Boveri & Cie. Inductive type firing arrangement for series connected thyristors in a high voltage rectifier. 3,742,331, Cl. 321-11.000.

Bossi, Oscar, to Honeywell Information Systems Italia. High speed on-the-fly printer providing arresting of the type characters in the printing positions. 3,741,110, Cl. 101-93-c.

Bossons, Walter Howard; and Lindstaedt, Horst, to Masson Scott Thrissell Engineering Limited. Web splicing methods. 3,741,079, Cl. 93-1.100.

Boudry, Jean-Marie, to SESCOSEM- Societe Europienne de Semiconducteurs et de Microelectronique. MOS transistor circuits for pulse-shaping. 3,742,260, Cl. 307-304.000.

Bouligny, R. H., Inc.: *See—*
Pierce, John H.; Credle, Walter Carl; and Crawford, Lewis O., 3,741,453.

Bourat, Guy; and Margraff, Rodolphe, to Rhone-Poulenc S.A. Vinyl alcohol copolymers containing hydroxy sulfonyl groups. 3,741,945, Cl. 260-79.30r.

Bourdale, Lucien R. Device for filtering a particle-laden fluid. 3,741,892, Cl. 210-65.000.

Bourgeois, Alain Charles, to Elastelle Paul Fontanille & Fils. Elastic ribbon having a band of fancy designs and a method of manufacture of this ribbon. 3,740,974, Cl. 66-193.000.

Bouthors, Pierre; and Lefeuvre, Andre, to Regie Nationale des Usines Renault and Automobiles Peugeot. Electric motor and reduction gearing unit. 3,741,024, Cl. 74-220.000.

Bowen, Rafael L.; and Argentar, Harold, to United States of America, Health, Education, and Welfare. Tertiary aromatic amine accelerators in dental compositions. 3,740,850, Cl. 32-15.000.

Bowermaster, Allan H. Screen guard for gutters having a dual purpose manual operator. 3,740,787, Cl. 15-105.000.

Bowles Fluidics Corporation: *See—*
Bauer, Peter, 3,741,481.

Bowman, E. W., Incorporated: *See—*
Bowman, Edward W., 3,741,744.

Bowman, Edward W., to Bowman, E. W., Incorporated. Apparatus for annealing, conveying, transferring, and spraying glassware. 3,741,744, Cl. 65-348.000.

Boyd, John A.; Bond, Scott R.; Elliott, Ralph K.; Gisolfi, John J.; and Merkin, Eugene, said Bond, Elliott, Gisolfi and Merkin assors. to Union Environmental Corporation. Portable refuse handling apparatus. 3,741,107, Cl. 100-215.000.

Boyer, Charles B.; Orcutt, Franklin D.; Shaw, Robert L.; and Gregg, Galen C., to Battelle Memorial Institute. Apparatus for loading a high-pressure furnace. 3,741,718, Cl. 432-253.000.

Boyum, Oystein; Eriksen, Karsten Eigil; Solberg, Per; and Tveten, Kjell, to Norsk Hydro A.S. Process for the preparation of anhydrous $MgCl_2$ prills. 3,742,100, Cl. 264-14.000.

Braddon, Frederick D., to Sperry Rand Corporation. Active stabilizer for marine vessels. 3,741,145, Cl. 114-125.000.

Bradley, Robert W., to USM Corporation. High frequency cavity press. 3,742,180, Cl. 219-10.810.

Brady, Frank B.; and Watts, Chester B., Jr. Polarization reference for beam flying. 3,742,502, Cl. 343-107.000.

Brady, Jack C.: *See—*
Slover, Vasel R., Jr.; Hawk, Daniel E.; and Brady, Jack C., 3,741,321.

Brahler, George R., to Exitec, Inc. Dental prophy angle. 3,740,853, Cl. 32-59.000.

Brandenburg, Lane Howard; Gopinath, Bhaskarpillai; and Kurshan, Robert Paul, to Bell Telephone Laboratories, Incorporated. Interconnected loop digital transmission system. 3,742,144, Cl. 179-15.0al.

Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Clutch release bearing. 3,741,361, Cl. 192-110.00b.

Brax, Harri J.; Porinchak, Joseph F.; and Weinberg, Alan S., to Grace, W. R., & Co. Laminates of ethylene/vinyl acetate polymers and polymers of vinylidene chloride. 3,741,253, Cl. 138-137.000.

Brayley, Elwin J.: *See—*
Swift, Thomas E.; and Brayley, Elwin J., 3,741,185.

Braytenbah, Andrew S., to Westinghouse Electric Corporation. Steam turbine system with digital computer position control having improved automatic-manual interaction. 3,741,246, Cl. 137-624.110.

Brede, Raymond; and Stenresen, Erik, to Simrad A.S. Echo sounding apparatus with automatically regulated receiver gain. 3,742,438, Cl. 340-3.00r.

Brede, Uwe: *See—*
Gawlick, Heinz; Bendler, Hellmut; Brede, Uwe; Hubsch, Gunter; and Gottwald, Gunther, 3,742,163.

Bregi, Benjamin F.; Motz, Carl H.; and Bassoff, Arthur B., to Lear Siegler, Inc. Gear rolling machine. 3,740,987, Cl. 72-94.000.

Breitling, Julius; and Pollack, Bernard, to Sight & Sound Wedding Albums, Ltd. Talking photograph album. 3,741,565, Cl. 274-4.00c.

Breitzmann, John F.; and Lackey, Robert P., to Texas Instruments, Incorporated. Variable frequency oscillator. 3,742,384, Cl. 331-111.000.

Brenholdt, Irving R., to Farrand Optical Co., Inc. Measuring apparatus. 3,741,654, Cl. 356-4.000.

Brennan, James A., to Mobil Oil Corporation. Dimerization of olefins with boron trifluoride. 3,742,082, Cl. 260-683.900.

Brenner, Charles Herbert, to Motorola, Inc. Optical target sensor. 3,741,111, Cl. 102-70.20p.

Brenner, Richard L., to Dow Chemical Company, The. Explosive composition containing a vinylidene chloride polymeric latex. 3,741,831, Cl. 149-41.000.

Bretthauer, Frank N. Adjustable jig for portable electric saws. 3,741,063, Cl. 83-745.000.

Breuer, Hermann, to Squibb, E. R., & Sons, Inc. Alpha-thioureidocephalosporanic acid compounds. 3,741,962, Cl. 260-243.00c.

Brewer, Howell K. Quick change pneumatic tire. 3,741,268, Cl. 152-175.000.

Brichta, Franz; and Driesel, Franz, to SFK Kugellagerfabriken GmbH. Apparatus for mounting carrier arms in spinning machines. 3,740,798, Cl. 19-267.000.

Bridenbecker, Arno Don: *See—*
Olyphant, Murray, Jr.; and Bridenbecker, Arno Don, 3,742,084.

Bridgeport Metal Goods Manufacturing Company, The: *See—*
Vasas, Martin M.; and Moore, Arthur H., 3,741,666.

Bright, Alfred William; Makin, Brian; and Lamb, David Robert, to National Research Development Corporation. Charge emitting devices. 3,742,263, Cl. 310-5.000.

Bristol-Myers Company: *See—*
Essery, John Michael; and Cheney, Lee Cannon, 3,741,965.

British Aluminium Company Limited, The: *See—*
Bone, David Charles, 3,741,751.

British Aluminum Company Limited, The: *See—*
Stewart, Donald T.; and McAlpine, Ian, 3,741,782.

British Leyland Truck and Bus Division Limited: *See—*
Surrall, Alan John, 3,741,818.

British Visqueen Limited: *See—*
Highfield, Peter Edward; and Hill, Gordon John, 3,741,850.

Brock, Blanchard M.; and Josephson, Paul R., Jr., to Eastman Kodak Company. Method for producing plates having enlarged halftone patterns and article produced by said process. 3,741,652, Cl. 355-132.000.

Brock, Leslie E., to Kerant Electronics Ltd. Testing apparatus for light emitting diodes and method therefor. 3,742,356, Cl. 324-158.00d.

Brodowski, Walter: *See—*
Frank, Dieter; Brodowski, Walter; and Hentschel, Peter, 3,741,933.

Broersma, Harmen, to Microtel N.V. Electro-acoustic magnetic reed type transducer having box-shaped pole piece. 3,742,156, Cl. 179-119.00a.

Brookes, Ronald: *See—*
Wantage, Terence Colclough; and Brookes, Ronald, 3,742,099.

Brookover, George B.; Hudecek, Carl J.; and Oliver, John H., to Owens-Illinois, Inc. Hermetic packages and methods of fabricating same. 3,740,838, Cl. 29-627.000.

Brooks, Dean P.; Fell, Ferol S.; Garrison, Harold Keith; and Job, Richard W., to Hesston Corporation. Stack feeding method and apparatus. 3,741,051, Cl. 83-23.000.

Brooks, S. Hunter W., to Rust Engineering Company, The. Method of recycling waste cellulosic materials. 3,741,863, Cl. 162-4.000.

Brown, Donald R., to Western Electric Company, Inc. Distributed resistor-capacitor network and methods of fabricating a distributed resistor-capacitor network. 3,742,398, Cl. 333-70.0cr.

Brown, Gertrude T.: *See—*
Brown, Robert G.; and Grant, Gene Louise, 3,741,376.

Brown, Henry C., to Brown Well Service & Supply Company. Liner hanging apparatus. 3,741,302, Cl. 166-208.000.

Brown, Robert C.: *See—*
Brown, Robert G.; and Grant, Gene Louise, 3,741,376.
Murtaugh, Justin J.; and Brown, Robert C., 3,741,900.

Brown, Robert G.; deceased (by Brown, Gertrude T.; and Brown, Robert C.; heirs); and Grant, Gene Louise, 100% to Magni-Case, Inc., mesne. Pocket holder with magnetic clasp. 3,741,376, Cl. 206-5.00r.

Brown, Robert Hulme, to C.A.V. Limited. Vehicle transmission control systems. 3,741,036, Cl. 74-752.00d.

Brown Well Service & Supply Company: *See—*
Brown, Henry C., 3,741,302.

Brown, William Ray, to Mallory, P. R., & Co., Inc. Multi-cam timer with clutch means allowing independent cam adjustment and rotation of cam assembly independent of motor. 3,742,159, Cl. 200-38.00r.

Browne, John Patrick, to Sandall Precision Company Limited. Fluid control valves. 3,741,237, Cl. 137-332.000.

Bruch, Walter, to Licentia Patent-Verwaltungs-GmbH. Method for recording a PAL color television signal. 3,742,127, Cl. 178-5.4cd.

Brunswick Corporation, mesne: *See—*
Karbo, Richard S., 3,741,542.

Brutt, Frederick J.: *See—*
Bell, Kenneth B.; Brutt, Frederick J.; and Mazanek, Alfonso J., 3,742,158.

Bryan, John F., Jr. Traction increasing system. 3,741,269, Cl. 152-208.000.

Bryan, William S.; and Johnson, Joseph H., to Communication Transistor Corporation. R.F. power transistor. 3,742,319, Cl. 317-235.00r.

Bryant, Gladys. Composite indefinitely reusable decorative candle. 3,741,711, Cl. 431-125.000.

Bryant, John A.; Horne, Orion P.; and Hullikin, Edwin L., Jr., to Texas Gas Transmission Corporation. Electronic telemetering calibrator. 3,742,472, Cl. 340-177.0ca.

Brzostek, Richard, to Woodward Governor Company. Signal conversion circuit. 3,742,252, Cl. 307-246.000.

Brzuszek, Emil J.: *See—*
Brzuszek, John T.; and Brzuszek, Emil J., 3,742,192.

Brzuszek, John T.; and Brzuszek, Emil J. Electrical heating device and method. 3,742,192, Cl. 219-553.000.

Bubley, Henry J.: *See—*
Green, Melvin E.; Oltra, Claude H.; and Bubley, Henry J., 3,741,116.

Buchinski, Joseph J.; and Zenuk, Charles H., to Texas Instruments, Incorporated. Method for making stainless steel-aluminum composite material. 3,740,828, Cl. 29-470.100.

Buck, Robert Grainger; Deltuvia, John Joseph, Sr.; and Spinks, Albert Hunter, said Buck assor. to American Telephone and Telegraph Company and said Deltuvia and said Spinks assors. to Bell Telephone Laboratories, Inc. Call source verification arrangement. ,742,155, Cl. 179-175.300.

Buckley, William R., to Polaroid Corporation. Container device for treating photographic film with a liquid. 3,741,099, Cl. 95-98.000.

Bulgakov, Petr Lavrentievich: *See—*
Kozheurov, Vsevolod Rodionovich; Berezin, Leonid Georgievich; Safarov, Georgy Samuilovich; and Bulgakov, Petr Lavrentievich, 3,741,280.

Bulin, Shelly A., to Case, J. I., Company. Control arm assembly for hinged members. 3,740,791, Cl. 16-139.000.

Bulkley, David D.: *See—*
Poole, Richard R.; and Bulkley, David D., 3,742,191.

Bunker-Ramo Corporation: *See—*
Albrecht, Francis E.; Baxter, William D.; De Michiel, John; Duggan, Robert J.; Greenblum, Carl; Grosky, Stephen A.; and Langer, Arthur, 3,742,288.
Albrecht, Francis W.; Baxter, William D.; Duggan, Robert J.; and Grosky, Stephen A., 3,742,482.

Bunker-Ramo Corporation, The: *See—*
Besch, Alois Ruppert, 3,741,562.

Bunting, William; and Langer, Arthur W., Jr., to Esso Research and Engineering Company. Chelated sodium compounds. 3,742,057, Cl. 260-583.000.

Burdfska, Kurt: *See—*
Pugin, Andre; Burdfska, Kurt; and Model, Ernst, 3,741,995.

Burdick, Ralph V., Jr. Container with snap-open cover. 3,741,431, Cl. 220-43.00p.

Burgdorf, Marten: *See—*
Kienzler, Wolfgang; and Burgdorf, Marten, 3,740,992.

Burkholder, Harvey Z., to U.S. Industries, Inc. Egg packing machine. 3,741,368, Cl. 198-37.000.

Burkwall, Morris P., Jr., to Quaker Oats Company, The. Preparation of a high protein simulated cheese product. 3,741,774, Cl. 99-117.000.

Burman, Bruce G.: *See—*
Schneider, Emery J.; and Burman, Bruce G., 3,742,261.

Burris Industries, Incorporated: *See—*
Powell, Lynn L., 3,740,774.

Burris, W. Alan. Corona generator. 3,742,301, Cl. 317-4.000.

Burroughs Corporation: *See—*
Kronies, Reinard Kurt, 3,742,253.
Kupsky, George A.; and Kollmyer, Robert E., 3,742,279.
Looschen, Floyd W., 3,742,459.
Ogle, James A., 3,742,483.

Burroughs, James R.: *See—*
Bentley, Ralph C.; and Burroughs, James R., 3,741,433.

Burroughs Wellcome & Co. (U.S.A.) Inc.: *See—*
Hodson, Harold Francis, 3,742,050.

Burroughs Wellcome Co.: *See—*
Grivsky, Eugene M., 3,742,014.

Burrow, John M., Jr. Cart for transporting television set. 3,741,574, Cl. 280-5.320.

Burth, Rolf-Dieter: *See—*
Gerlach, Albrecht; and Burth, Rolf-Dieter, 3,742,249.

Burton, Charles, to Temple University. Radiological diagnostic method. 3,741,198, Cl. 128-2.00a.

Burton, Pearl, to International Telephone and Telegraph Corporation. Inorganic flameproofing composition for organic materials. 3,741,929, Cl. 260-40.00r.

Busby, Hubert: *See—*
Jackson, William J.; and Busby, Hubert, 3,741,673.

Bush, Dale A. Demand-responsive fish feeder. 3,741,163, Cl. 119-54.000.

Bush, Richard Paul; Lloyd, Norman Cecil; and Pearce, Christopher Arthur, to Dow Corning Limited. Cyclalicilazanes. 3,742,003, Cl. 260-448.20n.

Bustin, Leopold. Self cleaning safety step bar. 3,741,341, Cl. 182-228.000.

Butlers Limited: *See—*
Rathband, Walter Howard, 3,742,428.

Buttle, Robert L., to United States of America, Atomic Energy Commission, mesne. Coating molybdenum with pure gold. 3,741,735, Cl. 29-198.000.

Buyken, Frank E.; and Foster, Robert C. Method of installing formties. 3,740,825, Cl. 29-433.000.

BW-Weber Verwaltungsgesellschaft m.b.H.: *See—*
Goebel, Hellmut; and Raiser, Ernst, 3,741,023.

Byrne, John F.: *See—*
Luebbe, Ray H., Jr.; Byrne, John F.; and Greeno, Thomas M., 3,741,762.

Byrne, Joseph E.; Clifford, Gilbert F.; Smith, Donald F.; and Odell, Arthur W., to Varian Adco. Code notcher for data carrier. 3,741,053, Cl. 83-71.000.

Cabeza, Henry. Aircraft landing gear. 3,741,503, Cl. 244-103.00s.

Cadwell, Sidney M. Method of fabricating and installing a submergible pipeline. 3,740,958, Cl. 61-72.100.

Caggiano, Vincent J.: *See—*
Schroader, Irvin H.; Hosea, Melvin E.; Caggiano, Vincent J.; and Miller, Leo C., 3,741,502.

Cairns, Thomas M.; and Kennedy, Robert D., to Ford Motor Company. Electrical terminal. 3,742,430, Cl. 339-252.00r.

California Institute of Technology: *See—*
Hurd, William J., 3,742,381.

Calle, Jaime; Flynn, Richard Thomas; and Porter, Marion Gene, to Honeywell Information Systems Inc. High speed data transfer for a peripheral controller. 3,742,457, Cl. 340-172.500.

Camco, Incorporated: *See—*
Terral, Ben D., 3,741,299.
Terral, Ben D., 3,741,303.

Cameron, Frank L.; and Miller, Harold L., to Westinghouse Electric Corporation. Current limiting fuse. 3,742,415, Cl. 337-279.000.

Campbell, Albert Evan, Jr.; and Jensen, Andrew O., to Xerox Corporation. Brazing ceramics. 3,740,830, Cl. 29-472.700.

Campbell, Thomas G.: *See—*
Campbell, Thomas G.; and Purvis, James A. (said Purvis assor. of 1/4 to said), 3,740,815.

Campbell, Thomas G.; and Purvis, James A., said Purvis assor. of 1/4 to said Campbell, Thomas G. Pallet stringer puller. 3,740,815, Cl. 29-200.00d.

Canadian Industries Limited: *See—*
Falconer, Errol Linton, 3,741,833.

Canadian International Paper Company: *See—*
Dauth, Marcel J.; and Valters, Ulois V., 3,741,005.

Canadian Patents and Development Limited: *See—*
Vankoughnett, Allan Leroy; and Wysloulzl, Walter, 3,742,394.

Cannon, James L. Camera system. 3,741,098, Cl. 95-37.000.

Canon Inc.: *See—*
Komiya, Yoshio, 3,741,839.

Canon, Jack Y. Means for supporting and aiming a hand-held firearm. 3,740,886, Cl. 42-94.000.

Canon Kabushiki Kaisha: *See—*
Ito, Yoshio; and Katayama, Hajime, 3,740,864.
Komori, Shigehiro; Kurahashi, Akira; and Hattori, Hiroyuki, 3,741,093.

Canon Kabushiki Kaisha, mesne: *See—*
Knechtel, Wilhelm; Petersdorf, Gerhard; and Sandner, Winfried, 3,741,646.

Cantarano, Costantino. Non-electrostatic printing electrography. 3,741,761, Cl. 96-1.00r.

Cantatore, Giuseppe: *See—*
Bonvicini, Alberto; and Cantatore, Giuseppe, 3,741,930.

Canton, Lawrence J. Multiple well pump assembly. 3,741,298, Cl. 166-105.000.

Cantz, Rolf J., to Kennametal Inc. Tire stud. 3,741,270, Cl. 152-210.000.

Caputo, William R., to Westinghouse Electric Corporation. Motor control system. 3,741,348, Cl. 187-29.00r.

Carborundum Company, The: *See—*
Avery, Ralph L., 3,741,192.
Gage, Wayne T.; and Karski, Leo W., 3,741,485.

Carbrey, Robert Lawrence, to Bell Telephone Laboratories, Incorporated. Time division communication system utilizing time separation switching. 3,742,147, Cl. 179-15.0at.

Cardew, Kenneth Hugh Frederic; and Petty, Stuart Peter Fitmaurice, to National Research Development Corporation. Solenoid device. 3,742,477, Cl. 335-258.000.

Cardillo, Judy I.: *See—*
Apodesta, Dorothy; Cardillo, Judy I.; Eisele, Nancy E.; Fox, Eileen; and Nesler, Margaret L., 3,741,649.

Carle, Joseph T., to Oil Dynamics, Inc. Submersible motor cable for severe environment wells. 3,742,363, Cl. 174-102.00r.

Carley, Adam L. Method for electronic lithography. 3,741,118, Cl. 101-451.000.

Carney, Henry B., to Associated Packaging Inc. Shock absorbing paperboard package. 3,741,380, Cl. 206-45.140.

Caroli, Italo, to DBM Industries Limited. Stick injector with paper feed. 3,741,698, Cl. 425-125.000.

Carr, Douglas Wesley: *See—*
Pass, Peter John; Carr, Douglas Wesley; Knight, Rogers Evert; Gelder, Ronald; Morrell, Moreton; Smith, Leslie William; Harris, Leonard Frederick; and Van Bastelaere, Karel Leon August, 3,741,236.

Carr, Theodore G.; Richmond, Jon C.; Dueker, James E.; and Wagner, Robert G., to McDonnell Douglas Corporation. Wide angle lateral photo-detector means. 3,742,223, Cl. 250-211.00j.

Carrier Corporation: *See—*
Neill, Donald E., 3,742,302.

Caruso, Stephen; Isenberg, Henry D.; Reichler, Allen S.; and Wiseman, Donald F., to Technicon Instruments Corporation. Method and apparatus for providing direct real-time determination of a particulate population. 3,742,194, Cl. 235-92.0pc.

Cary, Frank Holper; and Thon, Ronald A., to Molon Motor & Coil Corporation. Electric sub-fractional motor with encapsulated rotor. 3,742,269, Cl. 310-43.000.

Cary Instruments; a wholly owned subsidiary of Varian Associates: *See—*
Abu-Shumays, Ahmad; and Duffield, Jack J., 3,741,660.

Case, J. I., Company: *See—*
Bulin, Shelly A., 3,740,791.
Lanphere, Ralph C.; and Elton, Robert L., 3,740,882.

Casey, Edward H., to ACF Industries, Incorporated. Carburator flow stand. 3,741,008, Cl. 73-118.000.

Castagna, Eugene G., to Chevron Research Company. Dielectric bonding of thermoplastic masses. 3,741,845, Cl. 156-273.000.

Castaldi, John A.; and Goetz, Herbert, to Supreme Equipment & Systems Corporation. Encoding and marking apparatus. 3,741,469, Cl. 234-90.000.

Castiglioni, Albino, to SIMA Societa Italiana Macchine Automaliche S.r.l. Loading device particularly for feeding screw blanks and the like to a processing machine. 3,741,367, Cl. 198-33.0aa.

Castro, Radolfo; Newton, William J.; Toscano, Esteban J.; and Viosca, Felix Jerome, to Hughes Aircraft Company. Optical element protection in laser apparatus. 3,742,183, Cl. 219-121.001.

Catalano, Guy G.: *See—*
Olson, Jack Edward; and Catalano, Guy G., 3,741,022.

Catallo, Frank, to Fab-Con Machinery Development Corporation. Fabric edge decurling and controlling apparatus. 3,740,805, Cl. 26-54.000.

Cate, William D. Motorcycle seat. 3,741,596, Cl. 297-195.000.

Cattini, Isabella: *See—*
Leoni, Primo; and Cattini, Isabella, 3,741,314.

Caukler, Fritz: *See—*
Kuhnle, Paul; Caukler, Fritz; and Gassmann, Willy, 3,741,080.

C.A.V. Limited: *See—*
Brown, Robert Hulme, 3,741,036.
Kellett, Eric, 3,740,948.
Russell, Michael Frederick, 3,741,025.

Cavanaugh, Lawrence R.; and McCurry, Robert E., to International Business Machines Corporation. Electro-ionic printing apparatus. 3,742,516, Cl. 346-74.00r.

Cavote, Donald R.: *See—*
Anderson, John W.; and Cavote, Donald R., 3,741,756.

Cayla, Yves, to Societe d'Etudes et de Documentation Electronique (SEDELEC). Unit for translating and printing of data supplied in a form of combinations of binary signals. 3,741,112, Cl. 101-93-c.

Cedar, Raymond J., to Ford Motor Company. Anti-dieseling carburetor structures. 3,741,178, Cl. 123-97.00b.

Cederholm, Carl E.: *See—*
Howland, Richard E.; and Cederholm, Carl E., 3,740,894.

Celanese Corporation: *See—*
Jamison, Saunders E.; and Soehngen, John W., 3,742,104.

Centuri Engineering Company, Inc.: *See—*
McAllister, Jack G., 3,741,120.

Cerberus A.G.: *See—*
Muller, Peter, 3,742,474.

Cesari, Giuseppe. Tooth brush complete with dispenser for the tooth paste. 3,741,667, Cl. 401-175.000.

Cesaro, Richard S. Tethered airborne communications and information transfer system. 3,742,358, Cl. 325-3.000.

Chadwick, George F., to Airco, Inc. Electrical resistor. 3,742,423, Cl. 338-334.000.

Chambon, Rene, to Societe Francaise d'Equipment Menager. Method of producing cutting teeth on cutting tools. 3,741,046, Cl. 76-104.00r.

Chaplygin, Igor Jurievich; Mitjushin, Dmitry Nikolaevich; Zapolnov, Dmitry Petrovich; Karamzina, Natalia Nikolaenva; Lebedeva, Valentina Grigorievna; and Lomagina, Irina Mikhailovna. Centrifugal suspension pump. 3,741,531, Cl. 259-96.000.

Chapman, Kenneth George: *See—*
Chapman, Paul Fraser, 3,742,210.

Chapman, Paul Fraser, to Chapman, Kenneth George. Collapsible lamp shade. 3,742,210, Cl. 240-108.00r.

Chappelow, Cecil C., Jr.; and Engel, James F., to Kerr-McGee Corporation. Fluorinated beta-diketones. 3,742,062, Cl. 260-592.000.

Chavanat, Paul; Epsztein, Bernard; and Mourier, Georges, to Thomson-CSF. High frequency circuits for electron tubes and tubes comprising such circuits. 3,742,293, Cl. 315-39.510.

Chavasse, Nicholas H., Jr.; and Withers, James C., to General Technologies Corporation. Low density, high-strength boron on beryllium reinforcement filaments. 3,741,797, Cl. 117-106.00r.

Chemagro Corporation: *See—*
Emerson, Carl D.; and Aichenegg, Paul C., 3,742,046.

Chemed Corporation: *See—*
Crotty, Homer L.; Coffey, Charles R.; and Tesdahl, Thomas C., 3,741,805.

Chemetron Corporation: *See—*
Dailey, James Howard, 3,741,908.

Chemische Werke Huls Aktiengesellschaft: *See—*
Nordsiek, Karl-Heinz; Sommer, Neithart; and Schwesig, Helmut, 3,741,927.
Sistig, Eberhard; and Reinermann, Karl-Heinz, 3,741,728.

Chen, Chi-Sin. Board game apparatus. 3,741,546, Cl. 273-134.0ad.

Cheney, Lee Cannon: *See—*
Essery, John Michael; and Cheney, Lee Cannon, 3,741,965.

Chestnut, Benjamin F.: *See—*
Weber, Richard H.; and Chestnut, Benjamin F., 3,741,019.

Chevron Research Company: *See—*
Abbott, Andrew Doyll; and Liston, Thomas V., 3,741,896.
Castagna, Eugene G., 3,741,845.

Chew, Charles R.: *See—*
Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; Hutt, Bruce L.; Chew, Charles R.; and Hall, Arthur M., 3,741,457.

Chi Lin, Kou: *See—*
Blavos, Nicholas G.; Chi Lin, Kou; and Dobson, Le Roy E., 3,742,122.

Chibata, Ichiro; Yamada, Shigeki; and Yamamoto, Masao, to Tanabe Seiyaku Co., Ltd. Process of resolving DL-serine m-xylene-4-sulfonate. 3,742,041, Cl. 260-501.120.

Chollet, Pierre; and Gervais, Edouard, to Noranda Metal Industries Limited. Method of preparing low density wrought zinc alloy with improved strength and low temperature ductility. 3,741,819, Cl. 148-11.50r.

Chopard, Pierre, to Omega Louis Brandt & Frere S.A. Protective casing for a wrist-watch. 3,740,944, Cl. 58-105.000.

Chore-Time Equipment, Inc.: *See—*
Kaiser, Steven A., 3,741,102.

Christensen, Birte; Christensen, Borge; Hovad, Helge; and Hovad, Karl Erik. Mandrel for use in and a method of producing containers and a machine for employing the method. 3,741,838, Cl. 156-173.000.

Christensen, Borge: *See—*
Christensen, Birte; Christensen, Borge; Hovad, Helge; and Hovad, Karl Erik, 3,741,838.

Christensen, Richard Hans; Combs, Earl Edward; and Petrone, Mario Albert. Process for preparation of a protected granule and dishwashing composition formed therewith. 3,741,904, Cl. 252-99.000.

Christian, Donald K.; and Stafford, Ronnie L., to Piedmont Engineering and Machine Company, Inc. Motor to shaft coupling to permit self-alignment therebetween. 3,740,970, Cl. 64-31.000.

Christian, Manfred, to Daimler-Benz Aktiengesellschaft. Cylinder head of an air-cooled internal combustion engine. 3,741,173, Cl. 123-41.57.

Chrzanowski, Thomas A.; and Grushkin, Bernard, to Xerox Corporation. Migration imaging employing pressure nip development. 3,741,758, Cl. 96-1.00r.

Chu, Richard C.: *See—*
Aakalu, Nanda Kumar G.; Chu, Richard C.; and Simons, Robert E., 3,741,292.

Chun, Sun W.: *See—*
Beuther, Harold; Chun, Sun W.; Hamilton, Harry A.; and McIlvried, Howard G., 3,741,888.

Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., to Gulf Research & Development Company. Oxidative sweetening with a calcined composite of an alkali metal silicate, an iron salt and a copper salt. 3,741,887, Cl. 208-191.000.

Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., to Gulf Research & Development Company. Oxidative sweetening of hydrocarbons with a calcined copper-containing precipitate of silica sol and iron salt. 3,741,889, Cl. 208-191.000.

Chupp, John P., to Monsanto Company. Method for producing amino-2,4-dihydro-2H-1, 3,5-thiadiazine-2-ones. 3,741,964, Cl. 260-243.00r.

Churchheus, Claude W.: *See—*
Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; Hutt, Bruce L.; Chew, Charles R.; and Hall, Arthur M., 3,741,457.

Churchill, Frank T.: *See—*
Seibt, Arthur H.; and Churchill, Frank T., 3,742,371.

Ciarico, Anthony J., to Kendall Company, The. Retractable closure cap. 3,741,217, Cl. 128-349.000.

Ciba-Geigy AG: *See—*
Ehrat, Kurt, 3,742,310.
Pugin, Andre; Burdfska, Kurt; and Model, Ernst, 3,741,995.
Ramanathan, Visvanathan; and Liechti, Hans Wilhelm, 3,741,719.

Ciba-Geigy Corporation: *See—*
Berrer, Dagmar; and Vogel, Christian, 3,741,745.
Evers, William J.; and McCracken, Philip G., 3,741,729.
Marand, Jean, 3,741,443.
Marand, Jean, 3,741,446.
Spivack, John Denon, 3,742,096.

Ciccarelli, Roger N.; Seldin, Ira L.; and Belli, Frank G., to Xerox Corporation. Frost imaging process. 3,741,759, Cl. 96-1.100.

Cincinnati Milacron Inc.: *See—*
Jackson, William J.; and Busby, Hubert, 3,741,673.
Marley, Thomas C., 3,742,200.

Cities Service Company: *See—*
Myers, Claude V., 3,740,861.

Cities Service Oil Company: *See—*
Rhoades, Vaughan W., 3,741,568.

Citizen Watch Co., Ltd.: *See—*

Koshi, Ryoichiro; Barozzi, Gian Piero; and Horeschi, Giancarlo, 3,741,470.

Clark Equipment Company: *See—*
Lindenfeld, John A.; Hartz, Cledith L.; and Shealy, Noah A., 3,741,343.
Patton, Jon R., 3,741,360.

Clark, Eugene F.; deceased (by Clark, Ursa W.; heir), to Fieldcrest Mills, Inc. Method and apparatus for weaving pile fabrics. 3,741,254, Cl. 139-2.000.

Clark, Harold C. Oil well slip handle. 3,740,802, Cl. 24-263.0ha.

Clark, James M.; and Haussmann, Robert H., to International Telephone and Telegraph Corporation. Asynchronous time division multiplexer and demultiplexer. 3,742,145, Cl. 179-15.0ba.

Clark, Loris D., to Koehring Company. Solid state safety control for fuel burning apparatus. 3,741,709, Cl. 431-79.000.

Clark, Thomas E., to GTE Automatic Electric Laboratories, Inc. Monostable multivibrator with a long time constant and an auxiliary transistor for ensuring turn-on of the transistor doncuting in the stable state. 3,742,258, Cl. 307-273.000.

Clark, Ursa W.: *See—*
Clark, Eugene F., 3,741,254.

Clark, Walter W.: *See—*
Boshinski, Edwin E.; Clark, Walter W.; Riehl, Roger W.; and Watson, William M., 3,741,324.

Clark, Willard, to Maul Bros., Inc. Lehr heating section. 3,741,554, Cl. 432-146.000.

Clayton, William J.; Smith, Clair C.; and Dewey, Earl K., to Mobil Oil Corporation. Modified steel rule die. 3,741,452, Cl. 225-103.000.

Clayton, William J., to Mobil Oil Corporation. Method for the production of fog-resistant thermoformed structures. 3,741,803, Cl. 161-247.000.

Clelland, John J., 20% to Degus, Carrie J. Skeleton frame and cover supported therefrom. 3,741,224, Cl. 135-1.00r.

Clifford, Gilbert F.: *See—*
Byrne, Joseph E.; Clifford, Gilbert F.; Smith, Donald F.; and Odell, Arthur W., 3,741,053.

Cloud, Charles E., to Cloud Machine Corporation. Individual sprinkle-packet with ribbed break-open neck. 3,741,384, Cl. 206-56.0aa.

Cloud Machine Corporation: *See—*
Cloud, Charles E., 3,741,384.

Clowes, Ernest J.: *See—*
Blake, George H.; and Clowes, Ernest J., 3,740,997.

Clowes, Garth A.; and Nagaoka, Masamitsu, to Entex Industries, Inc. Inductively coupled metal detector arrangement. 3,742,341, Cl. 324-3.000.

Coats, Robert Reid; and Greenway, John Michael, to Imperial Chemical Industries Limited. Method of stringing a thread through a hole. 3,741,050, Cl. 83-22.000.

Coba, Yozo: *See—*
Toyoda, Takashi; Miyabe, Yoshio; and Coba, Yozo, 3,741,841.

Coes, Loring, Jr., to Norton Company. Apparatus with selectively rigid and flexible support cable. 3,740,901, Cl. 51-166.0ts.

Coffey, Charles R.: *See—*
Crotty, Homer L.; Coffey, Charles R.; and Tesdahl, Thomas C., 3,741,805.

Cohen, Marcus S. Stringed musical instrument with electrical feedback. 3,742,113, Cl. 84-1.040.

Cohen, Martin J.; and Crowe, Robert W., to Gno, Franklin, Corporation. Apparatus and methods for detecting, separating, concentrating and measuring electronegative trace vapors. 3,742,213, Cl. 250-41.9tf.

Cohen, Vivian; and Slocombe, Sidney Charles, to Fuchs Electrical Industries (Proprietary) Limited. Core balance earth leakage protective systems. 3,742,306, Cl. 317-18.00d.

Cohernet Radiation: *See—*
Saunders, Richard J., 3,742,182.

Cole, Gerald S.; and Bolling, Gustaf F. Method of casting. 3,741,279, Cl. 164-114.000.

Cole, Robert Wayne: *See—*
Durkos, Larry George; Cole, Robert Wayne; and Denney, Jerry William, 3,742,196.

Coleman Company, Inc., The: *See—*
Gruver, Floyd O., Jr., 3,741,229.

Coles, Charles F.: *See—*
Smagala-Romanoff, Edward A., 3,741,665.

Colgate-Palmolive Company: *See—*
Freedman, Jules, 3,742,055.
Miles, Gilbert De Wayne; and McGhie, Russell Park, 3,741,447.

Collini, George John: *See—*
Jordan, David Paul; and Collini, George John, 3,740,831.

Collins, James Edward: *See—*
Bell, Robert Graham; Collins, James Edward; and Griffiths, Gwylfa George, 3,741,262.

Collon, Albert Adelin Mathieu Auguste, to Vickers-Vandergeeten Societe Anonyme. Bottling machines. 3,741,435, Cl. 220-93.000.

Colorcon Incorporated: *See—*
Signorino, Charles A., 3,741,795.

Columbia Gas Systems Service Corporation: *See—*
Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; Hutt, Bruce L.; Chew, Charles R.; and Hall, Arthur M., 3,741,457.

Combined Optical Industries Limited: *See—*
Stern, David, 3,741,632.

Combs, Earl Edward: *See—*
Christensen, Richard Hans; Combs, Earl Edward; and Petrone, Mario Albert, 3,741,904.

Combustion Engineering, Inc.: *See—*
Ambrose, Alwin W.; and Parker, Joseph W., III, 3,741,235.

Combustion Power Company, Inc.: *See—*
Smith, Richard D.; and Furlong, Dale A., 3,741,890.

Commonwealth Associates Inc.: *See—*
Fan, Sin Chou, 3,740,962.

Communication Transistor Corporation: *See—*
Bryan, William S.; and Johnson, Joseph H., 3,742,319.

Communications Satellite Corporation: *See—*
Wilkinson, Ernest James, 3,742,506.

Compagnie Generale de Geophysique: *See—*
Muniz, Raymond; and Argirakis, Robert, 3,741,333.

Compagnie Generale d'Electricite: *See—*
Aupoix, Marcel; and Moisson-Franckhauser, Francois, 3,742,116.

Comprehensive Health Testing Laboratories, Inc.: *See—*
Mani, Richard L., 3,741,471.

Conley, Dwain Dennis; and Lemkin, Jack Lewis, to General Mills Fun Group, Inc. Toy molding device. 3,741,706, Cl. 425-406.000.

Conroy, Robert; Hirsch, Burton; and Redel, Ray, to Meyer, Fred, of California. Simulated fireplace assembly. 3,742,189, Cl. 219-367.000.

Consolidated Concrete Limited: *See—*
Johnson, Frederick Stanley, 3,741,078.

Constantinescu, Dorin; Cruceanu, Sever; Spataru, Eugen; and Mereanu, Nicolae, to Institutul de Proiectari si Cercetari Pentru Utilaj Petrolier-IPCUP. Double tube core barrel which is lowered through drill pipe. 3,741,323, Cl. 175-246.000.

Container Corporation of America: *See—*
Friel, James J., 3,741,413.

Continental Can Company, Inc.: *See—*
Doyle, Diane J., 3,741,427.
Flint, Milford G.; and Ctegnt, Paul C., 3,741,462.

Continental Carbon Company: *See—*
Matthews, Roy S.; and Willis, Billy E., 3,741,165.

Continental Electronics Manufacturing Company: *See—*
Sundbye, Earl W., 3,742,188.

Cook, John W.: *See—*
Peterson, Robert S.; and Cook, John W., 3,740,983.

Coors Container Company, mesne: *See—*
Werth, Elmer D.; Sipe, Nelson E.; and Pearce, Ronald A., 3,741,432.

Copper Range Company: *See—*
Sheinhartz, Irving; Finlay, Walter L.; and Hay, Donald A., 3,741,788.

Corey, Joseph T., to Permclip Products Corporation. Fastener device. 3,741,385, Cl. 206-56.0ab.

Corkland, Alvin: *See—*
Mills, Arnold, 3,742,208.

Cornelius, George W. Rotary-radial action washing machine. 3,740,975, Cl. 68-18.00f.

Corodex N.V.: *See—*
Adegeest, Marco, 3,741,392.

Costello, Bernard J., to Argus Engineering Company, Inc. Method and apparatus for neat bonding in a local area using combines heating techniques. 3,742,181, Cl. 219-85.000.

Cote, Paul T., to General Electric Company. Arc gap circuits for flashing high-voltage photoflash lamps. 3,742,298, Cl. 315-323.000.

Cote, Yvon: *See—*
Beauregard, Rejean; and Cote, Yvon, 3,742,205.

Cotherm S.A.: *See—*
Snipeliski, Jacques, 3,742,417.

Courtaulds Limited: *See—*
Morrill, Charles Donovan, 3,741,294.

Coury, Joseph D., to United States of America, Army. Battery actuated by linear and angular acceleration. 3,741,811, Cl. 136-90.000.

Cowles, Leroy C.: *See—*
Hanson, Charles A.; and Cowles, Leroy C., 3,740,833.

Cox, Arthur, to Austin Company, The. Variable magnification optical system. 3,741,622, Cl. 350-40.000.

Cox, James S., to United States of America, Commerce. Seafood peeler using rollers on an endless conveyor and a bank of inclined rollers. 3,740,795, Cl. 17-73.000.

Cox, Norman D.; and McInnes, Alexander G. P., to International Research and Development Corporation. Lobster trap. 3,740,892, Cl. 43-100.000.

Craftmaster, Inc.: *See—*
Smith, Raymond P., Jr., 3,741,233.

Cramer, Harold W. Chair. 3,741,607, Cl. 297-302.000.

Crawford, Lewis O.: *See—*
Pierce, John H.; Credle, Walter Carl; and Crawford, Lewis O., 3,741,453.

Crawford, Lynn D.: *See—*
Sherman, Leigh E.; Adams, Walter P.; and Crawford, Lynn D., 3,742,150.

Crawford, Robert D.; and Johnson, Ralph D., to Johnson, Gordon, Company. Feather picker having sectional finger supports. 3,740,793, Cl. 17-11.100.

Credle, Walter Carl: *See—*
Pierce, John H.; Credle, Walter Carl; and Crawford, Lewis O., 3,741,453.

Creger, Paul L.: *See—*
Moersch, George W.; and Creger, Paul L., 3,742,068.

Crepinsek, Alois, to Security Technology Corporation. Door stile lock and latch bolt assembly. 3,740,979, Cl. 70-139.000.
Crescent Toy Company Limited, The: *See—*
Leaman, Graham, 3,740,885.
Cresswell, Alan, to Decafix Limited. Atomisers. 3,741,484, Cl. 239-424.000.
Creusot-Loire: *See—*
LeJeune, Pierre, 3,741,865.
Crim, Ivan H.: *See—*
Pittman, Clarence E.; and Crim, Ivan H., 3,741,472.
Crismani, Nerino. Simulated table football game. 3,741,541, Cl. 273-85.000.
Crivello, James V., to General Electric Company. Polyimides. 3,741,942, Cl. 260-78.0ua.
Cromleigh, Ralph G. Musical notation and actuator system. 3,741,066, Cl. 84-478.000.
Crook, Edward J., Jr., to American Hoist & Derrick Company. Safety hook. 3,741,600, Cl. 294-82.00r.
Crosby, Clinton D., to Sperry Rand Corporation. Half-turn word line return for plated-wire memory array. 3,742,469, Cl. 340-174.0dc.
Crosman Arms Company, Inc.: *See—*
Kester, Charles E.; and Hughes, Thomas E., 3,741,189.
Crotty, Homer L.; Coffey, Charles R.; and Tesdahl, Thomas C., to Chemed Corporation. Chlorine stable composition for cleaning and sanitizing and method of use. 3,741,805, Cl. 134-4.000.
Crowe, Robert W.: *See—*
Cohen, Martin J.; and Crowe, Robert W., 3,742,213.
Cruceanu, Sever: *See—*
Constantinescu, Dorin; Cruceanu, Sever; Spataru, Eugen; and Mereanu, Nicolae, 3,741,323.
Ctegnt, Paul C.: *See—*
Flint, Milford G.; and Ctegnt, Paul C., 3,741,462.
CTS Corporation: *See—*
Rozema, Arthur L.; Osburn, Carlton M.; and Vanbenthuysen, John D., 3,742,422.
Cullip, Jack D.: *See—*
Stefansen, Kaj E.; and Cullip, Jack D., 3,740,977.
Cullom, John T. Corrugated balloon flue. 3,740,930, Cl. 55-269.000.
Culter-Hammer, Inc.: *See—*
Leavitt, Minard A.; and Roulund, Poul B., 3,741,650.
Culver, Irven H., to Primus Mfg., Inc. and Southwestern Industries, Inc. Flexure mounting for friction wheel measuring devices. 3,740,856, Cl. 33-141.00r.
Cunningham, Robert E.: *See—*
Privott, Wilbur J., Jr.; and Cunningham, Robert E., 3,742,108.
Curtin, Christopher J.: *See—*
Frankland, Roger A.; and Curtin, Christopher J., 3,742,286.
Curtis, Charles Robert; and Lawrence, John Theodore, to AMP Incorporated. Electrical terminal having folded blade and method of manufacturing same. 3,742,432, Cl. 339-276.00t.
Curtis Instruments, Inc.: *See—*
Finger, Eugene P., 3,742,388.
Curtiss-Wright Corporation: *See—*
06/26/73; and Haberski, Richard Joseph, 3,741,293.
Cusano, Carmen M.: *See—*
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Cutler, Cassius Chapin, to Bell Telephone Laboratories, Incorporated. Predictive delayed encoders. 3,742,138, Cl. 178-68.000.
Cutter-Hammer, Inc.: *See—*
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D-D-D Engineering & Service Corporation: *See—*
Windsor, Meredith M.; and Heller, Ronald D., 3,741,261.
Dafler, James R.; and Niederberger, Richard P., to ESB Incorporated. Battery construction. 3,741,810, Cl. 136-86.00a.
Dageford, Ernest C., to BEC Products, Inc., mesne. Compressor protector system. 3,742,303, Cl. 317-13.00a.
Dahl, Robert R., to Eaton Corporation. Stress limiting hoist. 3,741,527, Cl. 254-168.000.
Dahlqvist, Bernt Henry Roland: *See—*
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Dailey, James Howard, to Chemetron Corporation. Depurative process and composition. 3,741,908, Cl. 252-330.000.
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Dalibor, Horst, to Reichhold-Albert-Chemie Aktiengesellschaft. Process for the manufacture of soluble organic copolymers as well as their use as binders components, especially in primers and top lacquers for galvanized sheet iron. 3,741,798, Cl. 117-132.00.
Damm, Charles C.; Osher, John E.; and Post, Richard F., to United States of America, Atomic Energy Commission. High energy neutral particle beam source. 3,742,219, Cl. 250-84.000.
Danfoss A/S: *See—*
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Danjzcek, William E.; Leuenberger, Jean Pierre; Micale, Fortunato J.; and Wagner, Ralph W., to Koh-I-Noor Rapidograph Inc. Method of venting a stylographic pen. 3,741,668, Cl. 401-258.000.
Darling, William W. Electric meter construction having circuit interrupt elements. 3,742,355, Cl. 324-149.000.
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Dauth, Marcel J.; and Valters, Ulois V., to Canadian International Paper Company. Wet web tensile tester. 3,741,005, Cl. 73-95.000.
Davis, Dale M.: *See—*
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Davis, Manfred. Multi-frequency mass spring oscillators. 3,742,387, Cl. 331-156.000.
Davis, Owen K.; Haupt, Robert C.; Hansen, Kenneth N.; and Slosiarek, Michael L., to Allis-Chalmers Manufacturing Company. Chassis suspension on vehicle frame. 3,741,329, Cl. 180-89.00r.
Davis, Ralph B.: *See—*
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Davis, Richard T. Method of controlling basic oxygen furnace and Bessemer converter processes. 3,741,750, Cl. 75-60.000.
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De Gioia, Frank A., to General Latex and Chemical Corporation. Method of preparing a cellular, urethane backed tufted rug. 3,741,854, Cl. 161-67.000.
De Kramer, Don: *See—*
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De Witt, Stewart H., to Westinghouse Electric Corporation. Hollow turbine rotor assembly. 3,741,681, Cl. 416-95.000.
deBettencourt, Joseph T.; and Tsao, Carson K. H., to Raytheon Company. Subsurface traveling wave antenna. 3,742,509, Cl. 343-719.000.
Decafix Limited: *See—*
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DeCaplo, Alfred F., Jr., to United States Surgical Corporation. Three-stage medical instrument. 3,740,994, Cl. 72-407.000.
Dee, Colin William. Bed support. 3,740,777, Cl. 5-348.000.
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Deibler, Robert R.; and Patterson, Tom W., to Hydr-O-Matic Pump Company. Ball check valve assembly. 3,741,243, Cl. 137-528.000.
Delatronchette, Claude, to Elf-Union S.A. Supply system for a light hydrocarbon-water emulsion burner. 3,741,712, Cl. 431-190.000.
Delplace, Michel. Garment construction. 3,740,765, Cl. 2-67.000.
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Deushane, Maurice L.; and Rohrer, David A., to Beckman Instruments, Inc. Electrochemical electrode liquid junction structure and method for producing same. 3,741,884, Cl. 204-195.00f.
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Diamond, Julius; and Auyang, King, to Rorer, William H., Inc. Phosphonium compounds. 3,742,064, Cl. 260-606.50f.
Dick, John M. Blood sample container. 3,741,400, Cl. 210-516.000.
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Dietrich, Heinz J.; and Steiger, Edward L., to Owens-Illinois, Inc. Mesomorphic composition of matter. 3,742,054, Cl. 260-566.00f.
Diez, Jose Arnaiz. Tile for coating and decorating surfaces. 3,740,914, Cl. 52-515.000.
Digneffe, Henri Joseph, to RCA Corporation. Protective switching circuit for providing power to a load from an alternating current source having peak-to-peak excursions within or above a given range. 3,742,337, Cl. 323-19.000.
Dijet Industrial Company, Limited: *See—*
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Dittrich, Walter H., to United States of America, Air Force. Multicylinder shell of fragmentized metal. 3,741,123, Cl. 102-67.000.
Dobkin, Robert C., to National Semiconductor Corporation. Differential amplifier with means for balancing out offset terms. 3,742,377, Cl. 330-30.00d.
Dobson, Le Roy E.: *See—*
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Doi, Hitoshi; Honsyo, Yoshihisa; and Uetani, Masanori, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Mitsubisha Denki Kabushiki Kaisha. Electric generator for spark ignited engine. 3,741,186, Cl. 123-149.00r.
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Donald, Raymond George; Spofford, Walter Richardson, Jr.; and Pomerantz, Daniel Ira, to Mallory, P. R., & Co., Inc. Electronic band-pass filter or oscillator. 3,742,259, Cl. 307-295.000.
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Dotterweich, William E., to Foote Products Valley Tow-Rite, division of Scott and Fetzer Company, The. Trailer hitch. 3,741,588, Cl. 280-491.00e.
Douglass, Richard W., to Norton Company. Capacitor with fibered valve metal anode. 3,740,834, Cl. 29-570.000.
Douglass, Richard W. Capacitor with fibered valve metal anode. 3,742,369, Cl. 317-230.000.
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Glomski, Ronald L.; and Savage, Albert B., 3,741,922.
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Dowd, William, to Dow Chemical Company, The. Color-stabilized alkanolamines. 3,742,059, Cl. 260-584.00r.
Dowgin, Robert V., to Pauli & Griffin Company. Abrasive blasting equipment and self-cleaning abrasive trap therefor. 3,741,738, Cl. 51-12.000.
Downing, Donald M. Traffic control sign. 3,741,147, Cl. 116-63.00r.
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Duffy, William, to Wiss, J., & Sons Co. Shears having clearance adjusting means between pivotal cooperating members. 3,740,846, Cl. 30-267.000.
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Duikers, Marcel, to Solvay & Cie. Trimming apparatus for rotary extrusion blow-molding machines. 3,741,705, Cl. 425-311.000.
Duke, June T.; and Prem, Dorothy C., to Standard Oil Company, The. Methacrylonitrile polymerization process. 3,742,092, Cl. 260-880.00r.
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Murman, Fernando; Lewis, George E.; Dunn, Allen I.; and O'Brien, Charles E., 3,741,296.
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Durall, David Scott; and Owczarski, William A., to United Aircraft Corporation. Method to improve the weldability and formality of nickel-base superalloys. 3,741,824, Cl. 148-127.000.

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Durand, Pierre E.; and Durand, Jean Ch. Vertically collapsible upright for lifting gantries and the like. 3,741,338, Cl. 182-155.000.

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Durrell, Charles W., Jr., 15% to Powell, B. J. and 27% to Griffith, Dr. Amphibian vehicle. 3,741,146, Cl. 115-1.00r.

Dursch, Friedrich; and Kocy, Octavian, to Squibb, E. R., & Sons, Inc. Water soluble n-carboxy derivatives of cephradine and cephalexin and a method for their preparation. 3,741,963, Cl. 260-243.00c.

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Dyer, Kermit W.; Handley, John V.; and Smith, Judson D., to Vendo Company, The. Locking apparatus for vending machines or the like. 3,741,619, Cl. 312-215.000.

Dynamit Nobel Aktiengesellschaft: *See—*
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Eakman, Stephen L.; and Wood, David F., to LFE Corporation (formerly Laboratory for Electronics Inc.). Nuclear radiation gauge standardizing system. 3,742,217, Cl. 250-83.30r.

Earle, Henry Leonard. Safety splice for handrail break. 3,740,799, Cl. 24-33.00b.

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Jaeschke, Ralph L., 3,742,270.
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Eaton, Sargent Sheffield, Jr., to RCA Corporation. Frequency divider. 3,742,248, Cl. 307-225.000.

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Eberle, William J. Method and apparatus for dispensing epoxy. 3,741,441, Cl. 222-135.000.

Eckels, Robert E. Remote rock breaking method apparatus therefor. 3,741,119, Cl. 102-23.000.

Eckert, Konrad, to Bosch, Robert, G.m.b.H. Suspension system for a car. 3,741,582, Cl. 280-124.00f.

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Edwards, Gordon C.: *See—*
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Eggert, Horst, to Siemens Aktiengesellschaft. Device for compressed gas circuit breaker. 3,742,169, Cl. 200-148.00e.

Ehrat, Kurt, to Ciba-Geigy AG. Apparatus for monitoring the action of electromagnetically operated printing hammers. 3,742,310, Cl. 317-123.000.

Ehrenspeck, Hermann W. Optimized reflector antenna. 3,742,513, Cl. 343-817.000.

Ehring, Heinz; and Peltzer, Bernd, to Bayer Aktiengesellschaft. Alkyd resins including cyclohexane monocarboxylic acid as a component thereof. 3,741,937, Cl. 260-76.000.

Ehrlich, Stanley L.; and Kirkland, Robert E., to Raytheon Company. System for activating a remote underwater device. 3,742,440, Cl. 340-5.00t.

Eichbaum, Barlane R. Apparatus for vaporizing a fuel-air mixture in the induction system of a combustion engine. 3,741,180, Cl. 123-122.00a.

Einstein, Bernard Caesar, to Litton Systems, Inc. Light amplifier device having an ion and low energy electron trapping means. 3,742,224, Cl. 250-213.0vt.

Eisele, Nancy E.: *See—*
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Eiseman, Fred S.; and Schenek, Leslie M., to GAF Corporation. Fabric treatment with halogenated carbamate antistatic agents. 3,741,801, Cl. 117-139.5cq.

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Eklof, Ake Torsten: *See—*
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Elder, Frederick A., to Westinghouse Electric Corporation. Timing means for use in a portable circuit breaker tester. 3,742,304, Cl. 317-141.00r.

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Elfstrom, Ingvar B.; and Osterlund, Dennis E. Diving suit. 3,740,764, Cl. 2-2.100.

Eliason, Kay E.; and James, James R., to Atlantic Richfield Company. Distribution device. 3,741,482, Cl. 239-296.000.

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Eltra Corporation: *See—*
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Elvrum, Don S. Curing and pretannage of hides. 3,741,722, Cl. 8-94.016.

Embling, Clifford Arthur; and Harrison, Alban, to Smiths Industries Limited. Information display arrangements. 3,742,494, Cl. 343-5.00r.

Emerson, Carl D.; and Aichenegg, Paul C., to Chemagro Corporation. α-(Dichlorovinylthio)-acetophenone. 3,742,046, Cl. 260-542.000.

EMI Limited: *See—*
Gale, Frederick Henry, 3,742,239.

Empire Products, Inc.: *See—*
Newman, Albert P., 3,742,119.

Enabnit, Robert S., to Goodyear Tire and Rubber Company, The. Conveyor belt condition monitoring apparatus. 3,742,477, Cl. 340-259.000.

Endl, Alfons. Photoelectric sensing system. 3,742,222, Cl. 250-209.000.

Endo, Yoshinori: *See—*
Ichinohe, Eisuke; Kubo, Noriyoshi; Nakamura, Kazuhiro; Endo, Yoshinori; and Katano, Takeshi, 3,742,262.

Endres, Dan D., to Scott Paper Company. Prefolded disposable diaper. 3,741,212, Cl. 128-287.000.

Endres, Dan D., to Kimberly-Clark Corporation. Prefolded disposable diaper. 3,741,213, Cl. 128-287.000.

Engel, James F.: *See—*
Chappelow, Cecil C., Jr.; and Engel, James F., 3,742,062.

Engel, Roger K., to Raven Industries, Inc. Aerodynamic decelerator. 3,741,505, Cl. 244-145.000.

Engelhardt, Albrecht: *See—*
Koppe, Herbert; Engelhardt, Albrecht; Ludwig, Gerhard; and Zeile, Karl, 3,742,023.

Englund, Robert M., to Sperry Rand Corporation. Search memory. 3,742,460, Cl. 340-172.500.

Engstrom, Oscar L. Relief valve mechanism for flushometers. 3,741,518, Cl. 251-44.000.

Entex Industries, Inc.: *See—*
Clowes, Garth A.; and Nagaoka, Masamitsu, 3,742,341.

Enthone Incorporated: *See—*
Saubestre, Edward B.; and Durney, Lawrence J., 3,741,905.

Epel, Joseph N.; and Hugh, Michael. Thermosetting composition. 3,742,086, Cl. 260-836.000.

Epshtein, Yakov Vulfovich: *See—*
Kavera, Alexandr Alexandrovich; Nitkovskikh, Anatoly Anatolievich; Grigoriev, Vladimir Andreevich; Pashkov, Arkady Borisovich; and Epshtein, Yakov Vulfovich, 3,741,223.

Epsztein, Bernard: *See—*
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Erdmenger, Rudolf: *See—*
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Erickson, Lloyd A., to Illinois Tool Works Inc. Blue lateral and purity magnet structure. 3,742,406, Cl. 335-212.000.

Eriksen, Karsten Eigil: *See—*
Boyum, Oystein; Eriksen, Karsten Eigil; Solberg, Per; and Tveten, Kjell, 3,742,100.

Erma, Eero Antero. Elastic pressure fluid driven motor. 3,740,960, Cl. 60-542.000.

Ermin, Vasily Stepanovich: *See—*
Yavorsky, Arsenty Vasilievich; and Ermin, Vasily Stepanovich, 3,741,695.

ESB Incorporated: *See—*
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Bilhorn, John M., 3,741,814.
Dafler, James R.; and Niederberger, Richard P., 3,741,810.
Jochmann, Bonnie K.; and Mervin, Torbjorn, 3,741,749.
Spellman, Patrick J.; Oltman, John E.; and Sanden, Gerald, 3,741,812.

Essery, John Michael; and Cheney, Lee Cannon, to Bristol-Myers Company. 7-[D-(α-Amino-α-phenyl-, 2-thienyl- and 3-thienylacetamido)]-3-methylisoxazol-5-yl) -carbanylthiomethyl-3-cephem-4-carboxylic acids. 3,741,965, Cl. 260-243.00c.

Essex International Inc.: *See—*
Sognefest, Peter W.; and Estes, Bay E., III, 3,742,447.

Esso Production Research Company: *See—*
Guy, Arthur L.; and Galloway, David E., 3,740,956.
Storfer, Stanley T., 3,741,894.

Esso Research and Engineering Company: *See—*
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Hunter, Edward A.; and Muenker, Adolf H., 3,741,829.
Marrese, Richard J.; Edwards, Gordon C.; and Zielinski, James, 3,741,746.
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Etablissements Metayer & Cie: *See—*
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Etat Francais Delegation Ministerielle pour l'Armement: *See—*
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Etat Francais represente par le Ministere d'Etat de la Defense National Delegation Ministerielle pour l'Armement (Direction des Poudres): *See—*
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Etherington, Robert W., to Mobil Oil Corporation. Oxidative dehydrogenation of ethylbenzene to styrene using a gold on titania catalyst. 3,742,079, Cl. 260-669.00r.

Ettenberg, Michael: *See—*
Lockwood, Harry Francis; and Ettenberg, Michael, 3,741,825.

Eubank, Douglas C. Collapsible saw horse stand. 3,741,339, Cl. 182-186.000.

Euer, Hartmut; and Pauli, Gunter. Apparatus and method for measuring and analyzing dynamic processes. 3,742,352, Cl. 324-77.00a.

Eurand S.p.A.: *See—*
Giani, Celestino; and Valducci, Roberto, 3,742,190.

Evans, Agnes J.: *See—*
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Evans, David John Ivor: *See—*
Fustukian, David A. W.; Norris, Leon F.; Fraser, Robert W.; and Evans, David John Ivor, 3,741,748.

Evans, David John Ivor; Veltman, Herbert; and O'Kane, Patrick T., to Sherritt Gordon Mines Limited. Acid leaching process for treating high grade nickel-copper mattes. 3,741,752, Cl. 75-101.000.

Evans, John Mon, to Lever Brothers Company. Detergent compositions. 3,741,903, Cl. 252-95.000.

Evans, Llewellyn W.; deceased (by Evans, Agnes J.; executrix), to Reem Manufacturing Company. Method of and apparatus for opening cap-equipped drums and the like. 3,740,824, Cl. 29-426.000.

Evans Products Company: *See—*
Williams, Gerald H., 3,741,127.

Evers, William J.; and McCracken, Philip G., to Ciba-Geigy Corporation. Apparatus for producing a solution of cyanuric chloride from gaseous cyanuric chloride. 3,741,729, Cl. 23-267.00r.

Evertz, Egon: *See—*
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Evjen, John Martin; and Dinkler, Leonard Ronald, to General Electric Company. Vibration resistant case and mounting bracket. 3,741,428, Cl. 220-18.000.

Exitaire Co., The: *See—*
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Exitec, Inc.: *See—*
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Fairchild Camera and Instrument Corporation: *See—*
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Fairfield Manufacturing Co.: *See—*
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Falconer, Errol Linton, to Canadian Industries Limited. Explosive composition containing a glycol and a hydroxy alkyl ether of a polysaccharide. 3,741,833, Cl. 149-109.000.

Fallows, John; and Worthington, John Edward, to Polygram Casting Co., Limited. Method of making shell-moulded articles therefor. 3,741,276, Cl. 164-72.000.

Fan, Sin Chou, to Commonwealth Associates Inc. Process of and apparatus for the recovery of helium from a natural gas stream. 3,740,962, Cl. 62-29.000.

Farah, Oscar G., to United States of America, Navy. Continuously variable delay line. 3,742,375, Cl. 330-5.500.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
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Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
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Radscheit, Kurt; Stache, Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,741,956.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Brunings: *See—*
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Farnham, Robert E.: *See—*
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Farnham, Robert E.; Prill, Fredric W.; Smith, Donald W.; and Plociennik, James L., to Barber-Greene Company. Proportioning control system for an asphalt plant. 3,741,532, Cl. 259-149.000.

Farrand Optical Co., Inc.: *See—*
Brenholdt, Irving R., 3,741,654.

Farrell, Richard, to United States of America, National Aeronautics and Space Administration. Wide temperature range electronic device with lead attachment. 3,742,316, Cl. 317-234.00r.

Farrington, Allan P., to Johnson & Johnson. Method of forming webs and apparatus therefor. 3,740,797, Cl. 19-156.300.

Fasco Industries, Inc.: *See—*
Lakin, Bryan L., 3,742,412.

Fastener Corporation: *See—*
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Faucci, Adriano: *See—*
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Fejer, Andrew A.: *See—*
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Fellows Gear Shaper Company, The: *See—*
Jones, J. Franklin, Jr., 3,741,659.

Fenner, Hans; and Looser, Hanspeter, to Zellweger AG. Central control receiver. 3,742,455, Cl. 340-164.00r.

Ferquerea, Jose Materno Gutierrez y: *See—*
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Ferranti Limited: *See—*
Thom, Ian Graham, 3,741,454.

Fessler, Leroy E.; and Davis, Wayne M., to Universal Oil Products Company. Ball joint assembly. 3,741,591, Cl. 285-270.000.

Fetting, Fritz: *See—*
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Fiala, Ernst, to Klink, Wolf Dieter. Energy absorber for automobile safety belts. 3,741,494, Cl. 242-107.400.

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Fieldcrest Mills, Inc.: *See—*
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Fielding, Harold Crosbie, to Imperial Chemical Industries Limited. Fluorinated compounds containing functional groups. 3,742,013, Cl. 260-465.50r.

Filatov, Andrei Dmitrievich: *See—*
Freidenberg, Anatoly Samuilovich; Basias, Igor Pavlovich; Shakhlin, Vladimir Ilich; Trifonov, Alexei Grigorievich; Shunin, Timofei Grigorievich; Filatov, Andrei Dmitrievich; Privalov, Mikhail Moiseevich; and Ovchinnikov, Gennady Elizarovich, 3,741,083.

Filteron International, Inc.: *See—*
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Finger, Eugene P., to Curtis Instruments, Inc. Coulometer controlled method and apparatus for generating an electrical function. 3,742,388, Cl. 332-2.000.

Finger, Otto R., to Display Corporation International. Placard holding display assembly. 3,740,881, Cl. 40-125.00h.

Fink, Ray S.: *See—*

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Finkel, Abraham M.; and Jensen, Charles R., to Lockheed Aircraft Corporation. Grappling device. 3,742,186, Cl. 219-160.000.

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Fischer, Adolf: *See—*
Osieka, Hans; Kiefer, Hans; and Fischer, Adolf, 3,742,007.

Fischer, Christopher L.: *See—*
Otte, Richard F.; and Fischer, Christopher L., 3,740,839.

Fischer, Harry C., to Allied Chemical Corporation. Open cycle ammonia refrigeration system. 3,740,961, Cl. 62-7.000.

Fish, Ian Anthony. Apparatus for cutting sheet material. 3,741,058, Cl. 83-277.000.

Fleischer, Ernest W., Jr.; and Greene, Rodney M. Roll film dispenser. 3,741,403, Cl. 211-135.000.

Fleming, John W., Jr., to Industrial Nucleonics Corporation. Air column density variation insensitive nucleonic gauging system. 3,742,218, Cl. 250-381.000.

Fleurant, Rolland. Towable thrasher. 3,741,311, Cl. 172-45.000.

Flint, Milford G.; and Ctegnt, Paul C., to Continental Can Company, Inc. Container for hermetic compressor. 3,741,462, Cl. 229-16.00r.

Flinth, Rune Nils Allan: *See—*
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Florence, David W.: *See—*
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Flowers, Fred Fort. Dump car and cover combination. 3,741,128, Cl. 105-377.000.

Floyd, George M. Solid end static discharger. 3,742,300, Cl. 317-2.00e.

Flynn, Richard Thomas: *See—*
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FMC Corporation: *See—*
McTamaney, Louis S.; and Begun, Robert A., 3,741,683.

Folus, Stanford G., to Becton, Dickinson & Company. Inoculation and transfer loop and sterilizer. 3,742,187, Cl. 219-240.000.

Fon Toy, Arthur Dock; and Rattenbury, Kenneth H., to Stauffer Chemical Company. Alkylammonium alkylphosphonamidates. 3,742,040, Cl. 260-501.210.

Fonken, Gunther S.; Herr, Milton E.; and Murray, Herbert C., to Upjohn Company, The. Oxygenated 3-azabicyclo [3.3.1] nonanes. 3,741,973, Cl. 260-293.540.

Font, Jaime Trabal. Construction of jack selectors in circular knitting machines. 3,740,971, Cl. 66-50.00b.

Foote, J. B., Foundry Co., The: *See—*
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Foote Products Valley Tow-Rite, division of Scott and Fetzer Company, The: *See—*
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Forbes, Donald F., to United States of America, Navy. Calibrate lock-on circuit and decommutator. 3,742,461, Cl. 340-172.500.

Forbes, Robert Graham: *See—*
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Ford Motor Company: *See—*
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Forsythe, David M.; and Runckel, William J., to Publishers Paper Co. Repair of wood panels. 3,741,853, Cl. 161-41.000.

Fortescue, Peter, to Gulf Oil Corporation. Control rod drive system. 3,741,867, Cl. 176-36.00s.

Fortner, Walter: *See—*
Bachner, Ernst; and Fortner, Walter, 3,741,277.

Foss, Frank D. Humidifier-dehumidifier device. 3,740,959, Cl. 62-3.000.

Foss, George J.: *See—*
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Fossberg, Robert A., to Hurum Shipping & Trading Company, Ltd. Flexible oil boom for high sea. 3,740,955, Cl. 61-1.00f.

Foster, Alan M.: *See—*
Roberts, Webster C.; and Foster, Alan M., 3,742,129.

Foster, Manus R.; and Patton, Bobbie J., to Mobil Oil Corporation. Apparatus for improving signal-to-noise ratio in logging-while-drilling system. 3,742,443, Cl. 340-18.0ld.

Foster, Robert C.: *See—*
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Foster Wheeler Corporation: *See—*
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Fox, Eileen: *See—*
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Fr. Hesser Maschinenfabrik Aktiengesellschaft: *See—*
Kuhnle, Paul; Caukler, Fritz; and Gassmann, Willy, 3,741,080.

Frailly, Robert Adam, to Eaton Corporation. Prevailing torque locknut. 3,741,266, Cl. 151-21.00b.

France, Delmar W.; and Ketcham, Arlo D., to General Electric Company. Densification of irradiated metal. 3,742,366, Cl. 250-106.00s.

Francourt, Terence, to Kroy Knitting Developments Limited. Patterning wheels for weft knitting machines. 3,740,972, Cl. 66-50.00a.

Frank, Dieter; Brodowski, Walter; and Hentschel, Peter, to Glanzstoff AG. Polycarbamoylamidrazones and their production from bisamidrazones and diisocyanates. 3,741,933, Cl. 260-47.0cb.

Frank, Rudolf: *See—*
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Witzig, Emil Karl; Frank, Rudolf; and Klein, Willi, 3,741,674.

Frankland, Roger A.; and Curtin, Christopher J., to Tektronix, Inc. Fast writing bistable storage tube and method of operation. 3,742,286, Cl. 315-12.000.

Franzen, Gustav, to Palitex Project-Company G.m.b.H. Belt drive apparatus having improved take-up. 3,741,026, Cl. 74-242.900.

Fraser, Robert W.: *See—*
Fustukian, David A. W.; Norris, Leon F.; Fraser, Robert W.; and Evans, David John Ivor, 3,741,748.

Frederiksen, Thomas M.; and Russell, Ronald W., to Motorola, Inc. Fuel pump driver circuit. 3,742,256, Cl. 307-254.000.

Fredriksson, Helge Adolf. Method for bending a gutter or equivalent into a curve. 3,740,995, Cl. 72-414.000.

Freedman, Jules, to Colgate-Palmolive Company. 3-Amino-bicyclo[2.2.2]octan-2-ols. 3,742,055, Cl. 260-570.5ca.

Freedman, Nathan, to Raytheon Company. MTI radar. 3,742,500, Cl. 343-7.700.

Freeman, Dixon L., to Monitor Cabinets, a division of Comerco, Inc. Corner-connected cabinet assembly. 3,741,425, Cl. 217-12.000.

Freeport Brick Company: *See—*
Painter, Paul C., 3,741,409.

Freidenberg, Anatoly Samuilovich; Basias, Igor Pavlovich; Shakhlin, Vladimir Ilich; Trifonov, Alexei Grigorievich; Shunin, Timofei Grigorievich; Filatov, Andrei Dmitrievich; Privalov, Mikhail Moiseevich; and Ovchinnikov, Gennady Elizarovich. Compaction devce for loose materials or concrete. 3,741,083, Cl. 404-116.000.

French, Thomas, & Sons Limited: *See—*
Wood, William; Griffiths, Mary; and Sellers, John, 3,741,259.

Frentress, Zane, to Deering Milliken Research Corporation. Control arrangement for constant-rate-yarn-delivery carpet tufting machines. 3,741,139, Cl. 112-79.00a.

Freter, Kurt: *See—*
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Freund, Gunter: *See—*
Herwig, Walter; Uebe, Rudolf; and Freund, Gunter, 3,741,936.

Fried, John H., to Syntex Corporation. Phenyl-benzodioxane derivatives. 3,741,985, Cl. 260-340.200.

Fried Krupp Gesellschaft mit bescharankter Haftung: *See—*
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Friedman, Alfred S.: *See—*
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Friedman, Morris: *See—*
Friedman, Shirley Kay; and Friedman, Morris, 3,741,448.

Friedman, Shirley Kay; and Friedman, Morris, to Globetrotter Industries, Inc. Collapsible wig stand. 3,741,448, Cl. 223-66.000.

Friel, James J., to Container Corporation of America. Structure for handling stacked flat articles. 3,741,413, Cl. 214-41.000.

Friend, Lawrence O., to Motorola, Inc. Differential radius transmission line length adjuster. 3,742,400, Cl. 333-84.00m.

Fries, Gunther K.; Oberhauser, Ernst-Gunther; and Betz, Friedel, to Moeller & Neumann GmbH. Flying shears for trimming metal plates and sheets. 3,741,059, Cl. 83-315.000.

Fritsch, Werner: *See—*
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Radscheit, Kurt; Stache, Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,741,956.

Fritsche, Peter; and Hulsmann, Heidemarie, to Glasurit-Werke M. Winkelmann GmbH. Electrophoretic coating composition containing a heat-curable acrylate resin, a fine particulate copolymer and a plasticizer. 3,741,923, Cl. 260-23.0ar.

Fritzmayer, Louis H., to General Electric Company. Electronic oven with ferrite RF rejection filters. 3,742,397, Cl. 333-70.00s.

Frohlich, Karl Heinrich, to Jansen, Th., G.m.b.H. Gate valve. 3,741,522, Cl. 251-159.000.

Frost, Wade W.; and Shy, Lamar G., to Oxford Industries, Inc. Button line strip cutter and stacker. 3,741,052, Cl. 83-24.000.

Fuchs Electrical Industries (Proprietary) Limited: *See—*
Cohen, Vivian; and Slocombe, Sidney Charles, 3,742,306.

Fuchs, Francis Joseph, Jr., to Western Electric Company, Incorporated. Apparatus and method for continuous extrusion. 3,740,985, Cl. 72-60.000.

Fuchs, Karl-Dieter: *See—*
Jud, Hans; Nussbaum, Manfred; and Fuchs, Karl-Dieter, 3,741,866.

Fuchs, Otto, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Linear alkyl-amido trans-quinacridone pigments. 3,741,970, Cl. 260-279.00r.

Fuchs, Otto; and Troster, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Brunings. Water-insoluble benzoxanthene-dicarboxylic acid imide dyestuffs. 3,741,971, Cl. 260-281.000.

Fuji Denki Seizo Kabushiki Kaisha: *See—*
Nitto, Yoshio; Kiyokuni, Nobuaki; and Kawasaki, Kikuo, 3,742,246.
Yabe, Masaya; Takahama, Teizo; Kono, Masaru; and Hirono, Katsumi, 3,742,314.
Yabe, Masaya; Kono, Masaru; Takahama, Teizo; and Hirono, Katsumi, 3,742,380.

Fuji Photo Film Co., Ltd.: *See—*
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Fukuda, Susumu, 3,741,097.
Iwano, Haruhiko; Shimamura, Isao; Ohi, Reiichi; and Shishid, Tadao, 3,741,765.
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Ohmura, Hiroshi, 3,741,091.
Sugiyama, Mitsunori; Ohi, Reiichi; Shishido, Tadao; and Omura, Masaki, 3,741,950.
Ukuma, Toshiyuji; and Nagai, Hisakuni, 3,742,220.

Fujii, Fumio; Kurahara, Koji; Igata, Akitoshi; Abe, Nobuyoshi; and Yamamoto, Tetsuo, to Mitsui Toatsu Chemicals, Incorporated. Vat dyes. 3,741,994, Cl. 260-364.000.

Fujii, Yasuhiro. Hydraulic jack for use in garage. 3,740,952, Cl. 60-477.000.

Fujinami, Akira; Ozaki, Toshiaki; Nodera, Katsuji; Akiba, Keiichiro; Yamamoto, Sigeo; Ianaka, Katsutoshi; and Ooishi, Tadashi, to Sumitomo Chemical Company, Ltd. N-phenylsuccinimide derivatives. 3,741,981, Cl. 260-326.5fm.

Fujino, Sadao; and Magara, Yoshio, to Mitsubishi Chemical Industries, Limited. Novel basic, cationic dyestuff. 3,741,982, Cl. 260-326.750.

Fujita, Kinji, to Kabushiki Kaisha Suwa Seikosha. Apparatus for driving an electric watch. 3,740,943, Cl. 58-28.00a.

Fujitsu Limited: *See—*
Shinoda, Masaichi; and Igarashi, Masaru, 3,741,826.

Fujiwara, Shohei: *See—*
Iizuka, Mutsuo; Fujiwara, Shohei; Kano, Gota; Hasegawa, Hiromasa; Teramoto, Iwao; and Iwasa, Hitoo, 3,742,315.

Fujiwara, Yoshio; Naito, Keiichi; and Odajima, Toru, to Sony Corporation. Printed circuit board. 3,741,858, Cl. 161-185.000.

Fukuda, Susumu, to Fuji Photo Film Co., Ltd. Slide-type film take-up mechanism. 3,741,097, Cl. 95-31.0ac.

Fukushima, Hideaki: *See—*
Seki, Takashi; Toki, Katsuyuki; Nakatani, Hiroshi; Suzuki, Yoshio; Fukushima, Hideaki; and Nawashiro, Yoshio, 3,741,999.

Fukushima, Osamu: *See—*
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Furlong, Dale A.: *See—*
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Fuson, Edith Gale. Hand restraining mitt. 3,741,207, Cl. 128-133.000.

Fustukian, David A. W.; Norris, Leon F.; Fraser, Robert W.; and Evans, David John Ivor, to Sherritt Gordon Mines Limited. Metal dispersoid powder compositions. 3,741,748, Cl. 75-.5ac.

Fyans' Associates, Inc.: *See—*
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Fyans, Frank, to Fyans' Associates, Inc. Collapsible yarn dye tube. 3,740,976, Cl. 68-198.000.

Gabriel, James M.: *See—*
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Gachot, Jean: *See—*
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GAF Corporation: *See—*
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Eiseman, Fred S.; and Schenek, Leslie M., 3,741,801.
Erb, Edward R.; and Maass, Richard L., 3,741,851.

Gage, Wayne T.; and Karski, Leo W., to Carborundum Company, The. Fluid energy grinder for increasing bulk density of materials. 3,741,485, Cl. 241-39.000.

Gagliardi, Domenick D., to Union Carbide Corporation. After-fixing dyes with monoaminoalklysilicones with aminoalkyl chains having 3 carbon atoms. 3,741,721, Cl. 8-74.000.

Gaillard, Christiane: *See—*
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Galdo, Norberto: *See—*
Bockhorn, Henning; Fetting, Fritz; Herbertz, Hans-Adolf; and Galdo, Norberto, 3,741,736.

Gale, Frederick Henry, to EMI Limited. Discriminating devices. 3,742,239, Cl. 250-83.30h.

Galloway, David E.: *See—*
Guy, Arthur L.; and Galloway, David E., 3,740,956.

Gallucci, Francis, to United States Steel Corporation. Removable bending roll housing. 3,741,282, Cl. 164-282.000.

Gamble, John G., to Veeder Industries, Inc. Pulse generator. 3,742,243, Cl. 307-106.000.

Gamundi, Reynold F., to Eaton Corporation. Materials handling vehicle. 3,741,418, Cl. 214-512.000.

Gane, Alan Ernest, to International Standard Electric Corporation. Speed detector. 3,742,299, Cl. 317-5.000.

Gansheimer, Josef; and Schanzer, Oswald, to Dow Corning Corporation. Extreme pressure lubrication through additives. 3,741,897, Cl. 252-25.000.

Ganske, Kingston E., to Arvin Industries, Inc. Take-up hub and tape combination for tape treatment. 3,741,497, Cl. 242-192.000.

Garden City Envelope Company: *See—*
Palkovic, Victor; and Semple, Harry F., 3,741,535.

Gardioni, Paul Joseph. Paste gun. 3,741,438, Cl. 222-96.000.

Garland, Milton W. Variable speed transmission with proportional inverse torque reduction. 3,741,039, Cl. 74-786.000.

Garland, Stuart M., to Teletype Corporation. Case shifting code generator. 3,742,137, Cl. 178-17.00c.

Garnjost, Kenneth D., to Moog Inc. Hysteretic equalization in redundant electrically operated fluid powered servopositioning apparatus. 3,741,073, Cl. 91-363.00a.

Garrett, Ben B. Flexible joint for sewer pipe. 3,741,570, Cl. 277-207.000.

Garrison, Clarence A.: *See—*
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Garrison, Harold Keith: *See—*
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Gary, Wardell, to Westinghouse Electric Corporation. Static on-delay circuit with improved holding means. 3,742,311, Cl. 317-141.00s.

Gassmann, Willy: *See—*
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Gate, James M.; Levy, Allen D.; and Nunez, Louis, Jr., to Westinghouse Electric Corporation. Fabricated bedplate structure for a machine. 3,742,241, Cl. 290-52.000.

Gaudette, Roger R.: *See—*
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Gawlick, Heinz; Bendler, Hellmut; Brede, Uwe; Hubsch, Gunter; and Gottwald, Gunther, to Dynamit Nobel Aktiengesellschaft. Acceleration responsive switch with linearly movable contractors. 3,742,163, Cl. 200-61.45r.

Gay, James E., to Starline, Inc. Ground engaging baler. 3,740,935, Cl. 56-16.400.

Geary, Michael Edward, to Redifon Air Trainers Limited. Visual simulation. 3,741,638, Cl. 353-122.000.

Gebr. Happich G.m.b.H.: *See—*
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Gebr. Hofmann KG: *See—*
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Gehrke, Gunter: *See—*
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Gelabert, Amando E., to Signetics Corporation. Pulse generator using Schottky effect transistors. 3,742,368, Cl. 307-260.000.

Gelder, Ronald: *See—*
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General Motors Corporation: *See—*
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Gerlach, Albrecht; and Burth, Rolf-Dieter, to ITT Industries, Inc. Circuit for phase comparison. 3,742,249, Cl. 307-232.000.
Gerlach, Pierre; and Sire, Gerard, to Thomson-CSF. Electronic tubes such as tetrodes for very high-frequency operation. 3,742,292, Cl. 315-39.000.
Gerlovich, Albert F., to Rheem Manufacturing Company. Automatic machine for spraying the interior of container shells. 3,741,149, Cl. 118-2.000.
Gerson, Louis M.; and Simmons, William G., to Gerson, Louis M., Co., Inc. Paint strainer. 3,741,397, Cl. 210-497.000.
Gerson, Louis M., Co., Inc.: *See—*
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Gerum, Erich, to Diehl. Amplitude stabilized transistor drive circuit for time keeping devices. 3,742,386, Cl. 331-116.00m.
Gervais, Edouard: *See—*
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Getts, Sidney Arthur, to Metal Cutting Tools, Inc. Inserted blade cutting tool with locking pin. 3,740,807, Cl. 29-96.00r.
Geurtsen, Friedrich H.; and Wochner, Fred J., to Dennison Manufacturing Company. Turret for carrying containers. 3,741,373, Cl. 198-209.000.
Giani, Celestino; and Valducci, Roberto, to Eurand S.p.A. Apparatus for laboratory testing of sustained release drugs. 3,742,190, Cl. 219-389.000.
Giegle, G., & Co., GmbH: *See—*
Beyerlin, Hans-Peter, 3,741,907.
Giguere, Irving Jules, to Superior Electric Company, The. Stepping motor control including pulse responsive means to dienergize presently energized windings while delaying energization of windings to be energized. 3,742,329, Cl. 318-696.000.
Gikas, John: *See—*
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Girling Limited: *See—*
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Gittin, Alvin S.; and McDonald, Ralph E., said McDonald assor. to said Gittin Gittin, Alvin S. Electrical wiring system and ejectable device therein. 3,742,414, Cl. 337-206.000.
Gizeh-Werk G.m.b.H.: *See—*
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Glass, Marvin I.; Kripak, Leonid M.; and Meyer, Burton C., to Glass, Marvin, & Associates. Jet powered vehicle. 3,740,896, Cl. 46-206.000.
Glastra, Hendrik, to N.V. Maatschappij voor Industriele Research en Ontwikkeling. Cutting device. 3,741,062, Cl. 83-556.000.
Glasurit-Werke M. Winkelmann GmbH: *See—*
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Glaxo Laboratories Limited: *See—*
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Glomski, Ronald L.; and Savage, Albert B., to Dow Chemical Company, The. Aqueous latex paint thickening composition. 3,741,922, Cl. 260-17.00r.
Gloyd, Lawrence E., to Amerock Corporation. Self-service merchandiser. 3,741,617, Cl. 312-108.000.
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Goebel, Hellmut; and Raiser, Ernst, to BW-Weber Verwaltungsgesellschaft m.b.H. Tool changing mechanism for a machine tool. 3,741,023, Cl. 74-110.000.
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Gordon, Mack; and Phillippi, John F., to Aerodyne Development Corporation. Apparatus for collecting finely divided sticky material. 3,740,929, Cl. 55-261.000.
Gorgens, Joseph E.; Heske, William A.; and Goff, Randall, to Dresser Industries, Inc. Motion displacement transducer. 3,742,233, Cl. 250-231.00r.
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Gothard, Nicholas, to Filteron International, Inc. Methods of and apparatus for separating solid and liquid particles from air and other gases. 3,740,925, Cl. 55-5.000.
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Greve, Heinz, to Hauni-Werke Korber & Co., KG. Machine for the production of filter rod sections or the like. 3,741,846, Cl. 156-360.000.

Grier, John P. Camping trailer. 3,741,606, Cl. 296-22.000.

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Griot, Rudolf G., to Sandoz-Wander, Inc. Substituted terphenyls. 3,741,974, Cl. 260-293.830.

Grivsky, Eugene M., to Burroughs Wellcome Co. and Wellcome Foundation, Ltd. Preparation of benzonitriles. 3,742,014, Cl. 260-465.00b.

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Gross, Alan E.; Larson, Rodney L.; and Skoe, Ralph E., to MTS System, Corporation. Control mode switching system for a servomechanism. 3,742,324, Cl. 318-597.000.

Grossman, Leonard N., to General Electric Company. Non-destructive detection process for nuclear fuel rods. 3,742,367, Cl. 250-391.000.

Grube, William L., to MacLean-Fogg Lock Nut, Co. Adapter for pierce nut applying tool. 3,740,818, Cl. 29-211.000.

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Gumpertz, Donald G., to Industrial Electronic Engineers, Inc. Cathode ray tube with rear projection readout. 3,742,276, Cl. 313-86.000.

Gundlach, Robert W.; and Wells, John B., to Xerox Corporation. Manifold imaging apparatus. 3,741,641, Cl. 355-5.000.

Gunkel, Walter A. Ultrasonic inspection apparatus. 3,741,003, Cl. 73-67.700.

Gunter, Kenneth H. Canopy frame for bed. 3,741,225, Cl. 135-5.200.

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Gutmann, Hugo; and Schwieter, Ulrich, to Hoffman-La Roche, Inc. Polyene compounds. 3,742,038, Cl. 260-488.00h.

Gutow, Russell S., Jr., to Varian Associates. Magnet control circuit utilizing square root circuit and additional compensation circuit. 3,742,228, Cl. 250-41.9me.

Gutow, Russell S., Jr., to Varian Associates. Ion source having improved ion beam alignment and focus structure. 3,742,275, Cl. 313-63.000.

Guy, Arthur L.; and Galloway, David E., to Esso Production Research Company. Portable retaining structure. 3,740,956, Cl. 61-46.500.

Guyette, Frank L.: *See—*
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Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; Hutt, Bruce L.; Chew, Charles R.; and Hall, Arthur M., to Columbia Gas Systems Service Corporation. Lineup clamp and backup device. 3,741,457, Cl. 228-44.000.

H B Engineering Corporation: *See—*
Baker, Hugh M., Jr.; and Genter, Roland E., 3,742,454.

Ha, In W.; Hollstein, Carl P., Jr.; and Ruble, Frank D., to Information Storage Systems, Inc. Memory disc pack drive having accurate read/write head positioning. 3,742,470, Cl. 340-174.00b.

Haberski, Richard Joseph: *See—*
06/26/73; and Haberski, Richard Joseph, 3,741,293.

Haboush, Edward J. Prosthesis for hip joints. 3,740,769, Cl. 3-1.000.

Hacker, Robert W.; and McCoy, Wyn E., to Timken Company, The. Temperature and shape control system for rolling mill rolls. 3,740,982, Cl. 72-13.000.

Hadden, David M. Pulse discriminator and telemetering systems using same. 3,742,473, Cl. 340-210.000.

Hadni, Armand; Thomas, Robert; and Weber, Jacques, to Agence Nationale de Valorisation de la Recherche (ANVAR). Spectrometer for the far infrared. 3,741,658, Cl. 356-106.00s.

Haede, Werner: *See—*
Radscheit, Kurt; Stache, Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,741,955.
Radscheit, Kurt; Stache, Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,741,956.

Haertling, Gene H.; Land, Cecil E.; and McKinney, Ira D., to United States of America, Atomic Energy Commission. Strain biased ferroelectric electro-optics. 3,741,627, Cl. 350-150.000.

Hagedorn, Fred Bassett; and Kurtzig, Arjeh Jehuda, to Bell Telephone Laboratories, Incorporated. Method of producing magnetic devices utilizing garnet epitaxial materials. 3,741,802, Cl. 117-237.000.

Hagemeyer, Hugh J., Jr.: *See—*
Holmes, Jerry D.; and Hagemeyer, Hugh J., Jr., 3,742,071.

Hagemeyer, Hugh J., Jr.; and Robinson, Alfred G., III, to Eastman Kodak Company. Dihydroxybutanones. 3,742,063, Cl. 260-594.000.

Haggstrom, Rolf Paul: *See—*
Andersson, John-Erik; Gustafsson, Jan Kenneth; Haggstrom, Rolf Paul; and Karlsson, Bengt-Ake, 3,741,328.

Hahn & Co., KG: *See—*
Hahn, Friedrich Wilhelm, 3,741,507.

Hahn, Friedrich Wilhelm, to Hahn & Co., KG. Tire bead core ring. 3,741,507, Cl. 245-1.500.

Hahn, Linus K., to Industrial Nucleonics Corporation. Nucleonic guage for measuring properties of thin materials. 3,742,216, Cl. 250-83.30d.

Hajek, Manfred; and Wagner, Kuno, to Bayer Aktiengesellschaft. Process for the preparation of mono-and polyimines with electrophilic double-bond systems. 3,742,033, Cl. 260-471.00r.

Halaunbrenner, Lazare Nathan. Cage for breeding shellfish. 3,741,159, Cl. 119-4.000.

Haley, Ernest K. Vehicle blind side mirror system. 3,741,633, Cl. 350-302.000.

Hall, Arthur M.: *See—*
Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; Hutt, Bruce L.; Chew, Charles R.; and Hall, Arthur M., 3,741,457.

Hall International Inc., mesne: *See—*
Hedrick, John R., 3,741,352.

Hall, James D. Drill stem cleaner. 3,740,786, Cl. 15-104.100.

Hallen, Jan-Ake; and Stiernstrom, Lars, to Ingeniorsfirman Gunnar Abrahanson AB. Mounting means for a level sensing device. 3,742,245, Cl. 307-118.000.

Hamaguchi, Hiroshi, to Minolta Camera Kabushiki Kaisha. Drier in copier. 3,740,867, Cl. 34-95.000.

Hamilton, Andrew Joseph; and Schneider, George, to Amchem Products, Inc. Highly alkaline titanated cleaner. 3,741,747, Cl. 148-6.15z.

Hamilton, Harry A.: *See—*
Beuther, Harold; Chun, Sun W.; Hamilton, Harry A.; and McIlvried, Howard G., 3,741,888.
Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., 3,741,887.
Chun, Sun W.; Hamilton, Harry A.; and Montagna, Angelo A., 3,741,889.

Hamilton, Harry I., Jr., to North American Philips Corporation. Magnetic latching reed relay. 3,742,404, Cl. 335-153.000.

Hamm, Larry E.; and Morley, Peter L., to Honeywell Information Systems Inc. Memory system for receiving and transmitting information over a plurality of communication lines. 3,742,466, Cl. 340-173.0rc.

Hammerschmied, Georg. Carburetors for internal combustion engines. 3,741,551, Cl. 261-78.00r.

Handley, John V.: *See—*
Dyer, Kermit W.; Handley, John V.; and Smith, Judson D., 3,741,619.

Hansen, Arne, to Kidde, Walter, and Company, Inc. Safety head arrangement for fire extinguisher. 3,741,310, Cl. 169-31.00r.

Hansen, Charles C.; and Nilles, John D., to Refrigerating Specialties Co. Refrigerant feed control and system. 3,741,242, Cl. 137-504.000.

Hansen, James E., to Cutter-Hammer, Inc. Soft start A.C. motor control. 3,742,370, Cl. 318-227.000.

Hansen, Kenneth N.: *See—*
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Hanson, Charles A.; and Cowles, Leroy C., to Pacific Valves, Inc. Method and apparatus for providing a hard metal coating on confined areas of a metal part. 3,740,833, Cl. 29-527.400.

Harbaugh, Samuel S.; and Rockwell, Perry M., to Allegheny Ludlum Steel Corporation. Apparatus for control of carbon content in steel produced in basic oxygen furnace process. 3,741,557, Cl. 266-35.000.

Harcourt Brace Jovanovich, Inc.: *See—*
Apodesta, Dorothy; Cardillo, Judy I.; Eisele, Nancy E.; Fox, Eileen; and Nesler, Margaret L., 3,741,649.

Hardies, Donald E.; and Rinehart, Jay K., to PPG Industries, Inc. Fluorinated carbonates. 3,742,010, Cl. 260-463.000.

Hardy, John C., to Angelica Corporation. Method of joining tubes to manifold. 3,741,849, Cl. 156-500.000.

Hardy, Leon: *See—*
Hardy, Pierre; Hardy, Leon; and Lekarski, Simeon, 3,741,475.

Hardy, Pierre; Hardy, Leon; and Lekarski, Simeon, 50% to Gachot, Jean. Summing arrangements. 3,741,475, Cl. 235-175.000.

Hargreaves, Derek Burtt; and Staniforth, Eric, to National Research Development Corporation. Apparatus for mixing and dispensing different particulates materials in accurately controllable proportions. 3,741,442, Cl. 222-142.000.

Harmon, Carlyll, to Johnson & Johnson. Apertured nonwoven fabrics and methods of making the same. 3,741,724, Cl. 8-115.500.

Harnden, John D., Jr.: *See—*
Kornrumpf, William P.; and Harnden, John D., Jr., 3,742,173.
Shattuck, Donald P.; and Harnden, John D., Jr., 3,742,272.

Harnden, John D., Jr., to General Electric Company. Induction cooking appliance including cooking vessel having means for transmission of temperature data by light pulses. 3,742,174, Cl. 219-10.490.

Harnden, John D., Jr., to General Electric Company. Induction cooking appliance including temperature sensing of food in inductively heated vessel with immersion-type temperature sensing means. 3,742,175, Cl. 219-10.490.

Harnden, John D., Jr., to General Electric Company. Induction cooking appliance including cooking vessel having means for wireless transmission of temperature data. 3,742,178, Cl. 219-10.770.

Harnden, John D., Jr., to General Electric Company. Induction cooking appliance including wireless transmission of temperature data. 3,742,179, Cl. 219-10.770.

Harnden, John D., Jr. Protective electrical feed-through assemblies for enclosures for electrical devices. 3,742,420, Cl. 338-21.000.

Harris, James W., to Microcopy Inc. Microfilm copier. 3,741,647, Cl. 355-50.000.

Harris, Jesse W., to Tampo Manufacturing Company, Inc. Ground compacting apparatus. 3,741,669, Cl. 404-117.000.

Harris, Leonard Frederick: *See—*
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Harris, William E. Guitar slide bar apparatus. 3,741,065, Cl. 84-319.000.

Harris-Intertype Corporation: *See—*
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Harrison, A. Michael: *See—*
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Harrison, Alban: *See—*
Embling, Clifford Arthur; and Harrison, Alban, 3,742,494.

Harrison, Michael Banks; and Benion, Robert, to AMPE Industrial Products Limited. Low friction bearing materials. 3,741,855, Cl. 161-91.000.

Harsco Corporation: *See—*
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Hart Chemical Limited: *See—*
Shane, Hugh J. S., 3,741,911.

Hartline, Ernst F.; Large, Donald M.; and Montone, Gregory E., to Western Electric Company, Incorporated. Handling of magnetically asymmetrical articles. 3,741,436, Cl. 221-156.000.

Hartmann, Ludwig A., to ICI America Inc. Process for preparing cyclic ketals. 3,741,986, Cl. 260-340.900.

Hartmannsgruber, Rudolf: *See—*
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Hartnett, Laurence John: *See—*
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Hartz, Cledith L.: *See—*
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Haruna, Takashi: *See—*
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Harvey, Donald M., to Eastman Kodak Company. Photographic apparatus for handling film units of the self-processing type. 3,741,095, Cl. 95-13.000.

Hasbiss, Denise: *See—*
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Hasbro Industries, Inc.: *See—*
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Hasegawa, Hiromasa: *See—*
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Hasegawa, Osamu: *See—*
Murakami, Masuo; Kawashima, Yuji; Kawakami, Hideyo; and Hasegawa, Osamu, 3,741,948.

Haselwood, Donald E.; and Solar, Carl M., to Nielsen, A. C., Company. Data synchronizing unit for data transmission system. 3,742,462, Cl. 340-172.500.

Haselwood, Donald E.; and Solar, Carl M., to Nielsen, A. C., Company. Data storage and transmission system. 3,742,463, Cl. 340-172.500.

Hashimoto, Kenichiro: *See—*
Arikawa, Masayasu; Ohi, Atsushi; Ihochi, Akihiko; and Hashimoto, Kenichiro, 3,742,184.

Hassing-Hansen, Jens, to Aktieselskabet Brodrene Hartmann. Article-revealing carton fragile objects. 3,741,461, Cl. 229-2.500.

Hastie, Edgar G.: *See—*
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Hastwell, Peter John: *See—*
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Hatano, Tadao: *See—*
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Hattori, Hiroyuki: *See—*
Komori, Shigehiro; Kurahashi, Akira; and Hattori, Hiroyuki, 3,741,093.

Haub, Le Roy E. Insulator for electric wires. 3,742,123, Cl. 174-138.00f.

Haubein, Albert Howard, to Hercules Incorporated. Certain O-(2-pyrimidyl) phosphates and their use as insecticides. 3,741,968, Cl. 260-251.00p.

Hauni-Werke Korber & Co., KG: *See—*
Greve, Heinz, 3,741,846.

Hauni-Werke Korbors & Co., KG: *See—*
Kiehn, Jurgen; Wahle, Gunter; and Lahmann, Rank-Dieter, 3,742,232.

Haupt, Robert C.: *See—*
Davis, Owen K.; Haupt, Robert C.; Hansen, Kenneth N.; and Slosiarek, Michael L., 3,741,329.

Hauser, Hans, to Foote, J. B., Foundry Co., The. Vehicle with transmission and position indicator. 3,741,148, Cl. 116-124.00r.

Hauser-Lienhard, Hans-Ulrich, to Grunzweig & Hartmann Aktiengesellschaft. Apparatus for carrying out full form casting process. 3,741,281, Cl. 164-253.000.

Haussmann, Robert H.: *See—*
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Havel, John F.: *See—*
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Hawk, Daniel E.: *See—*
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Hawkins, John J., to Poly-Optics, Inc. Extrusion process for optical fibres. 3,742,107, Cl. 264-174.000.

Hay, Donald A.: *See—*
Sheinhartz, Irving; Finlay, Walter L.; and Hay, Donald A., 3,741,788.

Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Current control device. 3,742,308, Cl. 317-125.000.

Hayano, Fusakazu: *See—*
Komoto, Hiroshi; Hayano, Fusakazu; and Takami, Toshio, 3,742,049.

Hayashibara Company: *See—*
Mitsuhaghi, Masakazu; Hirao, Mamoru; and Sugimoto, Kaname, 3,741,776.
Ueda, Seinosuke; and Kato, Koso, 3,741,873.

Hayden, Rodney; and MacDonald, Dennis Herbert, to TRW Inc. Small high current DC relay structure. 3,742,405, Cl. 335-187.000.

Hayes, John C., to Universal Oil Products Company. Dehydrogenation with a catalyst containing platinum, germanium and an alkali or alkaline earth metal. 3,742,078, Cl. 260-668.00d.

Hayter, Rex G. Agricultural apparatus having bracing means for laterally extending pivotal frame sections. 3,741,312, Cl. 172-448.000.

Heath, John R. Road vehicle having a below-bed storage compartment for a lift truck. 3,741,604, Cl. 296-1.00a.

Hebel, August G.; and Hebel, August G., III. Method for stress relieving metal. 3,741,820, Cl. 148-12.900.

Hebel, August G., III: *See*—
Hebel, August G.; and Hebel, August G., III, 3,741,820.

Hedberg, Nils Rune. Adjustable tool holder. 3,741,672, Cl. 408-146.000.

Hederich, Volker; Gehrke, Gunter; and Neeff, Rutger. Process for the continuous dyeing of polyester fibers. 3,741,720, Cl. 8-39.000.

Hedrick, John R., to Hall International Inc., mesne. Shaft brake assembly. 3,741,352, Cl. 188-170.000.

Hegedus, Balthasar; and Krasso, Anna, to Hoffmann-La Roche Inc. Process for the purification of L-serine. 3,742,034, Cl. 260-482.00r.

Heil, Werner, to Aktiengesellschaft Brown, Boveri & Cie. Structure for supporting a commutator assembly on the rotor of a dynamo-electric machines. 3,742,273, Cl. 310-236.000.

Heilman, William J., to Gulf Research & Development Company. Process for the preparation and recovery of esterified copolymers containing maleic anhydride. 3,741,940, Cl. 260-78.50t.

Heimann, Alfred; and Sugland, Wolfgang, to Kochs Adler AG., mesne. Sewing equipment for simultaneously sewing a plurality of buttonholes. 3,741,138, Cl. 112-67.000.

Heinemann Electric Company: *See*—
Nicol, Ronald; and Davis, Ralph B., 3,742,402.
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Heinvich Koppers Gesellschaft mit beschrankter Haftung: *See*—
Stanke, Walter; and Mertens, Gottfried, 3,741,806.

Heisler, Raymond A. Apparatus and method for orienting and case packing bailed containers. 3,740,919, Cl. 53-26.000.

Heller, Paul R.; Ying, Sui-Chun; and Luzader, James E., to Westinghouse Electric Corporation. Liquid cooled rotor for dynamoelectric machines. 3,742,266, Cl. 310-54.000.

Heller, Ronald D.: *See*—
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Hellman, Robert R., to Westport Development & Manufacturing Company, Inc. Differential pressure switch. 3,742,165, Cl. 200-83.00y.

Helmer, John C.; and Weichert, Norbert H., to Varian Associates. Apparatus for performing chemical analysis by electron spectroscopy. 3,742,214, Cl. 250-49.5af.

Henderson, Harvey. Display system having flexible gear. 3,742,490, Cl. 340-371.00r.

Henderson, Rosetta M., to Du Pont de Nemours, E. I., and Company. Aromatic acetamidoxime-O-carbamates. 3,742,056, Cl. 260-564.00g.

Hendrickson, Roger R.; Munson, William O.; Reed, Russell; and Shaw, Graham C., to Thiokol Chemical Corporation. Low temperature nitrogen gas generating composition. 3,741,585, Cl. 280-150.0ab.

Henniger, Peter Wolfgang, to Konenklijke Netherlandische Gist-en Spiritusfabriek N.V. 6-Aminopenicillanic acid derivatives and process for producing them. 3,741,958, Cl. 260-239.100.

Henrard, Armand; Kehrer, Fritz; and Wasem, Hans, to Sandoz Ltd. Guanidinosulfonylphenyl azo pigments having acetoacetamidophenyl coupling component radicals. 3,741,953, Cl. 260-193.000.

Henrickson, Gary C., to Vidar Corporation. Voltage to frequency converter having dual standard charge dispensers. 3,742,389, Cl. 332-19.000.

Henrion, W. S.; and Kuo, Chang-Kiang, to Texas Instruments, Incorporated. Automatic MOS grounding circuit. 3,742,254, Cl. 307-251.000.

Henschke, Ernest J.; Logemann, George H.; Moorad, Stanley; and Savio, Lino P., to Ekco Products, Inc. Separator. 3,741,410, Cl. 214-8.50k.

Hentschel, Peter: *See*—
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Herbertz, Hans-Adolf: *See*—
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Hercules Incorporated: *See*—
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Jamison, Joel D., 3,741,978.

Hercules Incorporated, mesne: *See*—
Schrott, Erwin; Bier, Gerhard; and Gumboldt, Albert Gustav Martin, 3,741,947.

Herd, David P.; Mc Caskill, John W.; and Bonds, James V., to Rockwell Manufacturing Company. Pipe hanger. 3,741,589, Cl. 285-3.000.

Herdemann, Bernhard, to Orenstein & Koppel Aktiengesellschaft. Shock-proof fork support for fork lift trucks. 3,741,346, Cl. 187-9.000.

Hering, Donald R.; and Lindsey, James M., to Sperry-Sun Well Surveying Company. Signal responsive display apparatus. 3,741,013, Cl. 73-151.000.

Herlag Holzwarenfabrik Kommanditgesellschaft: *See*—
Kipsch, Ernst-Guenter, 3,741,579.

Hermann, Hans; and Lindner, Helmut. Process for the preparation of aromatic trifluoromethyl compounds of the benzene series. 3,742,074, Cl. 260-651.00f.

Herr, Milton E.: *See*—
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Herron, W. S., to Ward & Son, Inc. Oven and space heater appliance. 3,741,194, Cl. 126-85.00b.

Herweg, Jack E., to Tomeco, Inc. Portable air conditioner. 3,740,964, Cl. 62-262.000.

Herwig, Walter; Uebe, Rudolf; and Freund, Gunter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Thermoplastic molding compositions based on saturated polyesters. 3,741,936, Cl. 260-75.00s.

Heske, William A.: *See*—
Gorgens, Joseph E.; Heske, William A.; and Goff, Randall, 3,742,233.

Heslinga, Adolf; and Napjus, Petrus Jan, to Nederlandse Organisatie voor Toegepast-Natuurweten Schappelijk Onderzoek ten behoeve van Nijverheid, Hendel en Verkeer. Method for hardening an epoxy having at least two 1,2-epoxy groups. 3,741,934, Cl. 260-47.0e.

Hess, Fritz K.; Stewart, Patrick B.; Zeile, Karl; and Freter, Kurt, to Boehringer Ingelheim G.m.b.H. 1-(p-Benzamido)-3-methyltriazenes. 3,741,951, Cl. 260-140.000.

Hesston Corporation: *See*—
Brooks, Dean P.; Fell, Ferol S.; Garrison, Harold Keith; and Job, Richard W., 3,741,051.

Hester, Jackson B., Jr., to Upjohn Company, The. 2-Acyl hydrazino benzo diazepines. 3,741,957, Cl. 260-237.0bd.

Hewitt, Robert E., to Xerox Corporation. Conveyor for developer apparatus. 3,741,372, Cl. 198-140.000.

Heyer-Schulte Corporation: *See*—
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Hickey, Lionel R.; and Guyette, Frank L., to Eastman Kodak Company. Sequencer device for controlling web replacement in electrophotographic apparatus. 3,741,640, Cl. 355-3.000.

Hicks, Weldon R.: *See*—
Moss, Kennard S., Jr.; and Hicks, Weldon R., 3,741,015.

Higashiyama, Kenji; and Hirata, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Device for measuring an activity of cadmium ions. 3,741,883, Cl. 204-195.00m.

Higgins, Anthony P.: *See*—
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Highfield, Peter Edward; and Hill, Gordon John, to British Visqueen Limited. Plastics web slitting and sealing device. 3,741,850, Cl. 156-515.000.

Hiland, John R.: *See*—
Welton, Donald E.; and Hiland, John R., 3,740,946.

Hilfing, Karl Erik, to Atlas Copco Aktiebolag. Subsea drilling assembly. 3,741,320, Cl. 175-6.000.

Hill, Gordon John: *See*—
Highfield, Peter Edward; and Hill, Gordon John, 3,741,850.

Hill, Robert J., to Westinghouse Electric Corporation. Core and coil with protectial covering. 3,742,411, Cl. 336-96.000.

Hillyard, Peter Thomas, to Lucas, Joseph (Industries) Limited. Ignition coils. 3,742,312, Cl. 317-157.620.

Hilti Aktiengesellschaft: *See*—
Unterschweiger, Josef; and Schmuck, Peter, 3,741,317.

Hilton, Allan Richard, to Mining Developments A.G. Drilling or cutting of earth strata. 3,741,315, Cl. 173-105.000.

Hinckley, John N., to Beloit College. Start-up mechanism for rotary combustion engine. 3,741,170, Cl. 123-8.270.

Hinterstocker, Adolf. Electronic coin testing apparatus. 3,741,363, Cl. 194-100.00a.

Hirao, Mamoru: *See*—
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Hirata, Hiroshi: *See*—
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Hirata, Tetsuhiko: *See*—
Kakutani, Tsutomu; Hirata, Tetsuhiko; Matsuda, Shogo; Inagaki, Kenji; and Innami, Hidetoshi, 3,741,857.

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Hirono, Katsumi: *See*—
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Yabe, Masaya; Kono, Masaru; Takahama, Teizo; and Hirono, Katsumi, 3,742,380.

Hirsch, Burton: *See*—
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Hisatsune, Tomio: *See*—
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Hitachi, Ltd.: *See*—
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Hittmair, Paul: *See*—
Mitzsche, Siegfried; Kaiser, Wolfgang; Wohlfarth, Ernst; and Hittmair, Paul, 3,742,004.

Hix, Alfred G. O. Press brake die structure incorporating gage means. 3,740,996, Cl. 72-461.000.

Hobart Manufacturing Company, The: *See*—

Boshinski, Edwin E.; Clark, Walter W.; Riehl, Roger W.; and Watson, William M., 3,741,324.

Hobson, Charles F., Jr.; and Dimond, Herbert M., to General Electric Company. Electric shock protector for use with panel assembly. 3,742,305, Cl. 317-18.000.

Hodges, Leonard O.; and Suelzlt, Larry R., to Delta Electronic Central Corporation. Current-mode D. C. to A. C. converters. 3,742,330, Cl. 321-9.00a.

Hodson, Harold Francis, to Burroughs Wellcome & Co. (U.S.A.) Inc. Chemical compounds, processes for their preparation, and pharmaceutical compositions incorporating the same. 3,742,050, Cl. 260-564.00r.

Hoecker, August C., to Nicholson, Dean. Alarm device for detecting removal of or tampering with appliances or other articles. 3,742,480, Cl. 340-280.000.

Hoenig, Ernst Josef: *See*—
Kleiner, Walter Gustav; and Hoenig, Ernst Josef, 3,741,257.

Hoff-Stevens, Inc.: *See*—
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Hoffman, Lewis Charles, to Du Pont de Nemours, E. I. and Company. Metallizing compositions containing bismuthate glass-ceramic conductor binder. 3,741,780, Cl. 106-1.000.

Hoffman, Richard G., II, to Texas Instruments, Incorporated. Two axes angularly indexing scanning display. 3,742,238, Cl. 250-83.30h.

Hoffman-La Roche, Inc.: *See*—
Gutmann, Hugo; and Schwieter, Ulrich, 3,742,038.

Hoffmann-La Roche Inc.: *See*—
Hegedus, Balthasar; and Krasso, Anna, 3,742,034.
Leimgruber, Willy; and Weigele, Manfred, 3,742,015.

Hofmann, Dionys, to Gebr. Hofmann KG. Machine for balancing motor vehicle wheels. 3,741,016, Cl. 73-462.000.

Hoglund Engineering and Manufacturing Company: *See*—
Hoglund, Nils, 3,741,071.

Hoglund, Nils, to Hoglund Engineering and Manufacturing Company. Sensing apparatus for centering a cutting head and tool with respect to a work piece. 3,741,071, Cl. 90-11.00r.

Hojyo, Yasuo: *See*—
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Holder, Charles B.; Rubin, Isaac D.; and Cusano, Carmen M., to Texaco Inc. Polycarbonate resins blended with elastomers for improved impact strength. 3,742,082, Cl. 260-873.000.

Holick, Michael F.: *See*—
Deluca, Hector F.; Schnoes, Heinrich K.; Holick, Michael F.; and Semmler, Erich, 3,741,996.

Holland, Harvison C. Variable ratio proportioning device. 3,741,610, Cl. 303-6.00c.

Hollis, Ernest E., to Sanders Associates, Inc. Pulsing system. 3,742,383, Cl. 331-111.000.

Hollowell, John R. Vacuum trash collector. 3,740,933, Cl. 55-429.000.

Hollstein, Carl P., Jr.: *See*—
Ha, In W.; Hollstein, Carl P., Jr.; and Ruble, Frank D., 3,742,470.

Hollwedel, Henry C., Jr.; and Allan, Donald R., to George Lithograph Company. Photo-electronic film transport. 3,741,645, Cl. 355-41.000.

Holmes, Jerry D.; and Hagemeyer, Hugh J., Jr., to Eastman Kodak Company. Process for the production of hydroquinone. 3,742,071, Cl. 260-621.00r.

Holmqvist, to Tomelilla Dental AB. Holder assembly for dental tools. 3,740,852, Cl. 32-22.000.

Honda, Hidemasa: *See*—
Ouchi, Koji; Horie, Michil; and Honda, Hidemasa, 3,742,101.

Honesto, Elias. Coin holder and counting device. 3,741,222, Cl. 133-8.00c.

Honeywell Inc.: *See*—
Groezinger, Marlo Wayne, 3,742,211.
Peacock, Roger G., 3,742,297.
Pinckaers, Balthasar H., 3,742,339.
Regitz, William M., 3,742,465.

Honeywell Information Systems Inc.: *See*—
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Hamm, Larry E.; and Morley, Peter I., 3,742,466.

Honeywell Information Systems Italia: *See*—
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Honmaru, Shigery: *See*—
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Honsyo, Yoshihisa: *See*—
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Hoogenboom, Hendericus Gerardus: *See*—
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Horeschi, Giancarlo: *See*—
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Horgan, William J., Jr., to Blumcraft of Pittsburgh. Apparatus for assembling posts and rails. 3,741,595, Cl. 287-51.000.

Horie, Michil: *See*—
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Horne, Frederick F., to Airrigation Engineering Company, Inc. Sewer treatment to kill tree roots and other organic growth therewithin. 3,741,807, Cl. 134-24.000.

Horne, Orion P.: *See*—
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Horner, Robert H., to Hughey and Phillips, Inc. Intensity control circuit for visual approach slope indicator installation. 3,742,221, Cl. 250-206.000.

Horst, Richard L.: *See*—
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Hosea, Melvin E.: *See*—
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Hostetler, Van B., to Lilly, Eli, and Company. Apparatus for conveying and filling capsules. 3,741,370, Cl. 198-131.000.

Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. 1,1-disubstituted-2-alkyl isoindolines. 3,741,980, Cl. 260-326.100.

Hovad, Helge: *See*—
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Hovad, Karl Erik: *See*—
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Howald, Arthur M., to Shakespear Company. Water-repellent preservative dressing for polyvinyl chloride fishing lines. 3,741,784, Cl. 106-268.000.

Howe, John Arthur, to TRW Incorporated. Electric switch. 3,742,171, Cl. 200-168.00g.

Howland, Richard E.; and Cederholm, Carl E., to Hasbro Industries, Inc. Doll construction. 3,740,894, Cl. 46-161.000.

Hsiung, Andrew K., to Neptune Microfloc Incorporated. Perforated tube nodule for liquid treatment. 3,741,401, Cl. 210-519.000.

Huber, John Henry; and Volinskie, Robert, to AMP Incorporated. Fire resistant pluggable contact and receptacle. 3,742,426, Cl. 339-45.00r.

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Hudson Lock, Inc.: *See*—
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Huelle, Zbigniew Ryszard, to Danfoss A/S. Forced-flow vaporizer for compression-type refrigerating equipment. 3,740,967, Cl. 62-527.000.

Hufford, Donald L., to Hufford Industries, Inc. Material handling device. 3,741,374, Cl. 198-221.000.

Hufford Industries, Inc.: *See*—
Hufford, Donald L., 3,741,374.

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Hullikin, Edwin L., Jr.: *See*—
Bryant, John A.; Horne, Orion P.; and Hullikin, Edwin L., Jr., 3,742,472.

Hulsebus, Alan D.; and Benkovic, Roger J., to Eaton Corporation. Piston assembly. 3,741,077, Cl. 92-57.000.

Hulsmann, Heidemarie: *See*—
Fritsche, Peter; and Hulsmann, Heidemarie, 3,741,923.

Hummel, Heinz. Apparatus for measuring the differences in magnetic susceptibilities of gases. 3,742,344, Cl. 324-3.00c.

Hundeby, Gary T.: *See*—
Sweet, Bill M.; Hundeby, Gary T.; and Baldwin, Charles R., 3,740,880.

Hunder, David N., to Minnesota Mining and Manufacturing Company. Apparatus for particulate coating of an elongate article. 3,741,155, Cl. 118-634.000.

Hunt, Vernon J., to Display Corporation International. Holder for credit card purchase form. 3,740,877, Cl. 40-13.000.

Hunter, Anthony John; and Forbes, Robert Graham, to A.I. Welders Limited. Friction welding. 3,740,827, Cl. 29-470.300.

Hunter, Edward A.; and Muenker, Adolf H., to Esso Research and Engineering Company. High-energy propellants with polymeric fluoroamino binder and hydrozine diperchlorate. 3,741,829, Cl. 149-19.000.

Hunter Electronics, Inc.: *See*—
Martin, Stephen J., 3,742,142.

Hunter, Robert H., to ICI America Inc. Purification of polyglycerols. 3,742,069, Cl. 260-615.00r.
Hurd, William J., to California Institute of Technology. Wideband digital pseudo-gaussian noise generator. 3,742,381, Cl. 331-78.000.
Hurlburt, Charles E., to Bendix Corporation, The. Electromagnetic gyro torquer. 3,741,020, Cl. 74-5.460.
Hurst, John, to Grace, W. R., & Co. Novel sealants and adhesives. 3,741,856, Cl. 161-88.000.
Hurum Shipping & Trading Company, Ltd.: *See*—
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Hutchins, Robert L.: *See*—
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Hutchins, Teresa E.; and Hutchins, Robert L. Spring resistant type of exercising device. 3,741,539, Cl. 272-83.00r.
Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., to Pennwalt Corporation. Time monitored injection molding cycle with timed pressure control. 3,741,700, Cl. 425-159.000.
Hutt, Bruce L.: *See*—
Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; Hutt, Bruce L.; Chew, Charles R.; and Hall, Arthur M., 3,741,457.
Hwag, Cheng-Hsuon. Simple and convenient roaster. 3,741,103, Cl. 99-421.00a.
Hydr-O-Matic Pump Company: *See*—
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Ichinohe, Eisuke; Kubo, Noriyoshi; Nakamura, Kazuhiro; Endo, Yoshinori; and Katano, Takeshi, to Matsushita Electric Industrial Co., Ltd. Transistor detecting circuit. 3,742,262, Cl. 307-310.000.
ICI America Inc.: *See*—
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Igarashi, Masaru: *See*—
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Fujii, Fumio; Kurahara, Koji; Igata, Akitoshi; Abe, Nobuyoshi; and Yamamoto, Tetsuo, 3,741,994.
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Iizuka, Mutsuo; Fujiwara, Shohei; Kano, Gota; Hasegawa, Hiromasa; Teramoto, Iwao; and Iwasa, Hitoo, to Matsushita Electronics Corporation. Schottky barrier type semiconductor device with improved backward breakdown voltage characteristic. 3,742,315, Cl. 31-234.00r.
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Ikeda, Masamichi: *See*—
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Imperial Chemical Industries Limited: *See*—
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Inoue, Kiyoshi, to IJR (Inoue-Japax Research, Inc.). Spark-discharge surface treatment of a conductive workpiece. 3,741,426, Cl. 219-76.000.
Inoue, Tadanari; Yamamoto, Shigeru; and Wakasa, Yutaka, to Yokogawa Electric Works, Ltd. Memory protection system providing fixed, conditional and free memory portions corresponding to ranges of memory address numbers. 3,742,458, Cl. 340-172.500.
Institutul de Proiectari si Cercetari Pentru Utilaj Petrolier-IPCUP: *See*—
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Itoda, Masaru; Matona, Hirokuni; and Ushio, Masatoshi, to Kabushiki Kaisha Kokuei Kikai Seisakusho. Wrapping tool device in coin-wrapping machine. 3,740,923, Cl. 53-212.000.
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Jackson, Harry Yale, to Eaton Corporation. Hydraulic fuse. 3,741,241, Cl. 137-504.000.
Jackson, William J.; and Busby, Hubert, to Cincinnati Milacron Inc. Modular milling machine. 3,741,673, Cl. 408-234.000.
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Jaeger, John E., to Bissett-Berman Corporation, The. Inductively coupled connector. 3,742,408, Cl. 336-5.000.
Jaeschke, Ralph L., to Eaton Corporation. Single support eddy current doupling. 3,742,270, Cl. 310-105.000.
Jakubovicz, Jose. Musical instrument and associated method. 3,742,115, Cl. 84-470.000.
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Jamison, Joel D., to Hercules Incorporated. Certain O,O-di (C_1 and C_2 alkyl) phosphorodithioate and phosphorothioate esters useful as insecticides and acaricides. 3,741,978, Cl. 260-309.500.
Jamison, Saunders E.; and Soehngen, John W., to Celanese Corporation. Production of shaped synthetic articles having improved dyeability. 3,742,104, Cl. 264-78.000.
Jansen, Th., G.m.b.H.: *See*—
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Jennings, Richard Frank, to Johns-Manville Corporation. Method of and apparatus for introducing and controlling flow of batch in a furnace. 3,741,742, Cl. 65-135.000.
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Jezo, Maurice L., to International Telephone and Telegraph Corporation. Precision DME compatible with tacan. 3,742,496, Cl. 343-6.50r.
Jo, Seiji; and Makino, Katsuo, to Xerox Corporation. Xerographic development apparatus. 3,741,156, Cl. 118-636.000.
Joa, Curt G. Method for the fabrication of an absorbent pad with a body contacting cover. 3,741,842, Cl. 156-213.000.
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Johansson, Erik Lennart. Apparatus for winding sewing thread upon bobbins. 3,741,492, Cl. 242-20.000.
Johne, Rudolf; and Bechter, Max, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Heater for use in the manufacture of plastics filaments. 3,741,716, Cl. 432-59.000.
Johns, William H., to United States Steel Corporation. Gate for chain-link fence. 3,740,897, Cl. 49-381.000.
Johns-Manville Corporation: *See*—
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Johnson, Clarence S.: *See*—
McKinley, Larry E.; Johnson, Clarence S.; and Langille, Justin E., III, 3,741,143.
Johnson, Clarence S. Water heater. 3,741,169, Cl. 122-367.00c.
Johnson, Frederick Stanley, to Consolidated Concrete Limited. Piston construction for concrete pumps. 3,741,078, Cl. 92-244.000.
Johnson, Gordon, Company: *See*—
Crawford, Robert D.; and Johnson, Ralph D., 3,740,793.
Johnson, Joseph H.: *See*—
Bryan, William S.; and Johnson, Joseph H., 3,742,319.
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Johnson, Robert W., to Transport Security Corporation. Circuit board motion sensitive switch. 3,742,478, Cl. 340-262.00r.
Johnson Service Company: *See*—
McLean, Michael B., 3,742,379.
Johnson Service Company, mesne: *See*—
Nettles, Robert G., 3,742,327.
Johnson, William S., to Leland Stanford Junior University, Board of Trustees of the. Intermediates in total synthesis of 16-dehydroprogesterone. 3,741,987, Cl. 260-340.900.
Johnston, Douglas, to Blue, John, Company; a division of Subscription Television, Inc. Centrifugal pump. 3,741,679, Cl. 415-170.00a.
Johnston, John, to Scholl, Inc. Surgical pads. 3,741,210, Cl. 128-153.000.
Jonasson, Oliver Joseph, to Sundial Manufacturing Corporation. Meter for measuring tanning capability of sunlight. 3,742,240, Cl. 250-372.000.
Jones, Bernard H.: *See*—
Sears, James H.; and Jones, Bernard H., 3,741,153.
Jones, Charles H., to Westinghouse Electric Corporation. Side looking sonar apparatus. 3,742,436, Cl. 340-3.00r.
Jones, Cyril W. Fishing reel. 3,741,493, Cl. 242-84.10r.
Jones, Howell A., Jr.: *See*—
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Jones, J. Franklin, Jr., to Fellows Gear Shaper Company, The. Bias corrected measuring instrument. 3,741,659, Cl. 356-109.000.
Jones, John F.: *See*—
Martin, Jon W.; Jones, John F.; and Bell, Jeffrey L., 3,741,931.
Jones, Sam P., to J & S Carburetor Company. Gas carburetor. 3,741,737, Cl. 48-180.00c.
Jonsson, Bjorn; Ingelstedt, Sven; and Olsson, Sven Gunnar. Lung ventilator. 3,741,208, Cl. 128-145.600.
Jordan, David Paul; and Collini, George John, to International Nickel Company, Inc., The. Soldering fluxes. 3,740,831, Cl. 29-495.000.
Jordan, Donald Alfred; and Hartnett, Laurence John. Carrying device for medical and veterinary use. 3,740,778, Cl. 5-82.000.
Josephson, Paul R., Jr.: *See*—
Brock, Blanchard M.; and Josephson, Paul R., Jr., 3,741,652.
Jourdain, Leon Joseph. Interlocking furniture. 3,741,404, Cl. 211-148.000.
Jud, Hans; Nussbaum, Manfred; and Fuchs, Karl-Dieter, to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung. Suction box arrangement for a paper machine. 3,741,866, Cl. 162-374.000.
Judge, Ronald Anthony, to Timken Company, The. Roller bearings. 3,741,614, Cl. 308-180.000.
Juechter, Raymond F.: *See*—
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Jung, Joachim: *See*—
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Juratovic, John S.: *See*—
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Jurecic, Anton, to Pennwalt Corporation. Cement comprised of zinc oxide and acrylic acid copolymer. 3,741,926, Cl. 260-29.60m.
Jury & Spiers Proprietary Limited: *See*—
Ryan, Trevor B., 3,740,812.
Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See*—
Kienzler, Wolfgang; and Burgdorf, Marten, 3,740,992.
Kabil, Adel J., to Aktiengesellschaft Jungbunzlauer Spiritus- und Chemische Fabrik. Process for the production of citric acid by submerged fermentation. 3,741,869, Cl. 195-36.00r.

Kabisch, Gerhard; and Raupach, Siegfried, to Deutsche-Gold- und Silber-Scheindeanstalt vormals Roessler. Process for the extraction of hydrogen peroxide from working solutions of the alkylanthraquinone process. 3,742,061, Cl. 423-588.000.
Kabushiki Kaisha Hattori Tokeiten: *See*—
Kitai, Kiyoshi, 3,741,087.
Kabushiki Kaisha Kashifuji Tekkosho: *See*—
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Kahn, Frederic Jay, to Bell Telephone Laboratories, Incorporated. Electronically variable iris or stop mechanisms. 3,741,629, Cl. 350-160.01c.
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Kakutani, Tsutomu; Hirata, Tetsuhiko; Matsuda, Shogo; Inagaki, Kenji; and Innami, Hidetoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Composite light weight board and manufacture thereof. 3,741,857, Cl. 161-127.000.
Kalopissis, Gregoire, to L'Oreal. Treating keratinic fibers with polysulfhydeylated polymers. 3,741,723, Cl. 8-127.510.
Kamieniski, Conrad W.; and Eastham, Jerome F., to Lithium Corporation of America. Method of preparing telomers utilizing as catalysts hydrocarbon-soluble organometallic complexes of metals of groups I and IIa of the periodic table. 3,742,077, Cl. 260-668.00.
Kan, David T., to Signetics Corporation. Active region logic circuit. 3,742,250, Cl. 307-237.000.
Kanegafuchi Boseki Kabushiki Kaisha: *See*—
Takahashi, Kenji, 3,741,388.
Kaneko, Hirokazu: *See*—
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Kaneko, Hirokazu, to Kabushiki Kaisha Ricoh. Flash photography warning device. 3,741,094, Cl. 95-11.001.
Kaneko, Thomas M., to BASF Wyandotte Corporation. Low foaming detergent. 3,741,912, Cl. 252-529.000.
Kanengieter, Glenn G., to Owatonna Manufacturing Company, Inc. Means for mounting auxiliary apparatus on a portable feed mill. 3,741,487, Cl. 241-223.000.
Kannegiesser, Hermann, to Wanger, F. K., Ltd. Juice extractor with automatic pulp discharge. 3,741,104, Cl. 99-495.000.
Kano, Gota: *See*—
Iizuka, Mutsuo; Fujiwara, Shohei; Kano, Gota; Hasegawa, Hiromasa; Teramoto, Iwao; and Iwasa, Hitoo, 3,742,315.
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Kanowsky, Benjamin L. Hinged box wrench. 3,741,047, Cl. 81-121.00r.
Kappler, Hermann; and Wellons, Robert A., Jr., to Niemand Industries, Inc. Package. 3,741,379, Cl. 206-46.0ap.
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, to Merck & Co., Inc. Process of preparing a stereoisomer of α-hydrazino-β-(phenyl)alkanoic acids. 3,742,042, Cl. 260-516.000.
Karamzina, Natalia Nikolaenva: *See*—
Chaplygin, Igor Jurievich; Mitjushin, Dmitry Nikolaevich; Zapolnov, Dmitry Petrovich; Karamzina, Natalia Nikolaenva; Lebedeva, Valentina Grigorievna; and Lomagina, Irina Mikhailovna, 3,741,531.
Karbo, Richard S., to Brunswick Corporation, mesne. Arrowhead with removable blades. 3,741,542, Cl. 273-106.50b.
Karlsson, Bengt-Ake: *See*—
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Karmas, George, to Ortho Pharmaceutical Corporation. Aryl substituted-hydroxy substituted cyclohexenecarboxylic acids and esters. 3,742,028, Cl. 260-479.00r.
Karp, Arthur, to Stanford Research Institute. Directional filter using meander lines. 3,742,393, Cl. 333-10.000.
Karski, Leo W.: *See*—
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Kasai, Toshiyuki: *See*—
Yamamoto, Tadaaki; and Kasai, Toshiyuki, 3,741,661.
Kasin, Hans; and Thvedt, Odd Krane, to Spigwoerk, Christiania, Division Jobu. Loading and conveying device to be mounted on a tractor or the like. 3,741,526, Cl. 254-139.100.
Katano, Takeshi: *See*—
Ichinohe, Eisuke; Kubo, Noriyoshi; Nakamura, Kazuhiro; Endo, Yoshinori; and Katano, Takeshi, 3,742,262.
Katayama, Hajime: *See*—
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Kato, Takao: *See*—
Ono, Isao; Yanagihara, Tadahisa; Koga, Toshikuni; Kato, Takao; and Okada, Hiroaki, 3,742,039.
Katsuragi, Mamoru, to Minolta Camera Kabushiki Kaisha. Sheet-shaped film holding mechanism in projector. 3,741,637, Cl. 353-120.000.
Katsuyama, Takehiro: *See*—
Kubota, Masaichi; Yamamura, Taro; Kawai, Atsushi; Katsuyama, Takehiro; Ikeda, Masamichi; and Omoto, Seiichi, 3,741,862.
Katz, Silas; and Hastie, Edgar G., to United States of America, Army. Fluidic angular rate sensor. 3,741,018, Cl. 73-506.000.
Kaule, Walter, to Krautkramer, J. u. H., Dr., Gesellschaft fur Elektrophysik. Method and apparatus for measuring thickness by exciting and measuring free resonance frequency. 3,741,334, Cl. 181-.5np.
Kaupp, Donald H. Jig-saw puzzle board with framing inserts having variously shaped openings. 3,741,548, Cl. 273-157.00r.
Kavanaugh, Paul K.: *See*—
Boehly, Michael A.; and Kavanaugh, Paul K., 3,742,139.
Kavera, Alexandr Alexandrovich; Nitkovskikh, Anatoly Anatolievich; Grigoriev, Vladimir Andreevich; Pashkov, Arkady Borisovich; and Epshtein, Yakov Vulfovich. Device for liquid treatment of granulated products. 3,741,223, Cl. 134-191.000.
Kawabata, Yasuhiro: *See*—
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Kawada, Shin-Ichi; Hirokawa, Yoichi; and Masuzawa, Isao, to Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.). Autopilot system. 3,741,474, Cl. 235-150.100.
Kawaguchi, Katsuyuki, to Mitsubishi Jukogyo Kabushiki Kaisha. Combustion air supply arrangement for gas turbines. 3,741,483, Cl. 239-400.000.
Kawai, Atsushi: *See*—
Kubota, Masaichi; Yamamura, Taro; Kawai, Atsushi; Katsuyama, Takehiro; Ikeda, Masamichi; and Omoto, Seiichi, 3,741,862.
Kawakami, Hideyo: *See*—
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Kawamata, Isamu. Ice shaving device for home use. 3,741,486, Cl. 241-95.000.
Kawamura, Sadao; and Matsuno, Hideo, to Toray Engineering Co., Ltd. Bobbin winder, method and yarn package produced thereby. 3,741,489, Cl. 242-18.000.
Kawasaki, Kikuo: *See*—
Nitto, Yoshio; Kiyokuni, Nobuaki; and Kawasaki, Kikuo, 3,742,246.
Kawashima, Yuji: *See*—
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Kay, Leslie; and James, Graeme Leslie, to National Research & Development Corporation. Detection apparatus. 3,742,433, Cl. 340-1.00r.
Keener, Richard N., to American Seating Company. Segmental multi-unit study table. 3,741,852, Cl. 161-37.000.
Kehrer, Fritz: *See*—
Henrard, Armand; Kehrer, Fritz; and Wasem, Hans, 3,741,953.
Keisler, Frank Z.; and Smolker, Gary S., to United States of America, Navy. Single layer self-destruct circuit produced by co-deposition of tungstic oxide and aluminum. 3,742,120, Cl. 174-68.500.
Keller, Hans; and Sauer, Wolfgang, to ITT Industries, Inc. Cross-coupled complementary transistor circuit for single coil electromechanical oscillator. 3,742,385, Cl. 331-116.00m.
Keller, Leo. Method of and apparatus for controlling lithographic printing. 3,741,115, Cl. 101-148.000.
Kellett, Eric, to C.A.V. Limited. Hot gas generator employing rotary turbine. 3,740,948, Cl. 60-261.000.
Kelly, Lonnie M. Tripod type jack assembly. 3,741,509, Cl. 248-171.000.
Kenaga, Paul E. Panel construction. 3,740,916, Cl. 52-629.000.
Kendall Company, The: *See*—
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Kennametal Inc.: *See—*
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Kennedy, Robert D.: *See—*
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Kerant Electronics Ltd.: *See—*
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Kerr-McGee Corporation: *See—*
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Kerswill, Edson G.: *See—*
Urbanek, Karel; and Kerswill, Edson G., 3,741,886.

Kester, Charles E.; and Hughes, Thomas E., to Crosman Arms Company, Inc. Gas operated gun with removable clip loader. 3,741,189, Cl. 124-11.00r.

Ketcham, Arlo D.: *See—*
France, Delmar W.; and Ketcham, Arlo D., 3,742,366.

Keyser, Naaman H.: *See—*
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Kidde, Walter, and Company, Inc.: *See—*
Hansen, Arne, 3,741,310.

Kiedrowski, James A., to Sperry Rand Corporation. Inductive angle position transducer. 3,742,340, Cl. 323-5.100.

Kiefer, Hans: *See—*
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Kieffer, Richard, to Ugine-Carbone. Sintered hard alloy and method of making. 3,741,733, Cl. 29-182.500.

Kiehn, Jurgen; Wahle, Gunter; and Lahmann, Rank-Dieter, to Hauni-Werke Korbors & Co., KG. Method and apparatus for evaluating the operation of machines for the production and/or processing of smokers products. 3,742,232, Cl. 235-151.300.

Kienzler, Wolfgang; and Burgdorf, Marten, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Forming hollow blanks. 3,740,992, Cl. 72-361.000.

Killmann, Irolt G.; and Matto, Lawrence R., to Avco Corporation. Split housing piloting device. 3,741,680, Cl. 415-219.00r.

Kimberly-Clark Corporation: *See—*
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Kimoto, Teruhisa: *See—*
Mori, Hiroshi; Yamamoto, Michio; Namie, Koshi; and Kimoto, Teruhisa, 3,742,026.
Mori, Hiroshi; Yamamoto, Michio; Kondo, Chitoshi; Kimoto, Teruhisa; Takahashi, Satoshi; and Ochi, Toshiyuki, 3,742,027.

Kingston, Kenneth D. Shag rug groomer. 3,740,788, Cl. 15-142.000.

Kinoshita, Yoshiaki, to Mitsui Shipbuilding Engineering Co., Ltd. Floating structure for unloading liquid cargo. 3,741,264, Cl. 141-383.000.

Kipling, Barry John, to Pye Limited. Medical respirators. 3,741,209, Cl. 128-145.800.

Kipsch, Ernst-Guenter, to Herlag Holzwarenfabrik Kommanditgesellschaft. Perambulator. 3,741,579, Cl. 280-47.380.

Kirkland, Robert E.: *See—*
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Kirsch, Andrew F., to Westinghouse Electric Corporation. Static elevator supervisory system. 3,741,347, Cl. 187-29.00r.

Kirton, Lionel A.: *See—*
Youmans, Albert P.; and Kirton, Lionel A., 3,740,900.

Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, to Farbenfabriken Bayer Aktiengesellschaft. Cyanophenyl O,S-dialkyl phosphorothiolates. 3,742,094, Cl. 260-940.000.

Kishiwada, Susumu: *See—*
Shiraishi, Tatsuo; Kishiwada, Susumu; Shimizu, Shinkichi; Honmaru, Shigery; Toshira, Hiroshi; and Naogaoka, Yohishi, 3,741,910.

Kisling, James W., III: *See—*
Young, David E.; Kisling, James W., III; and Nutter, Benjamin P., 3,741,305.

Kitai, Kiyoshi, to Kabushiki Kaisha Hattori Tokeiten. Electric shutter exposure-time control circuit having counter light compensation. 3,741,087, Cl. 95-10.0ct.

Kiuchi, Hiroshi; Oshima, Keisuki; Nishidoi, Takashi; and Aya, Toshihiko, to Toray Industries, Inc. Thermoplastic resin composition containing an ethylene-vinyl acetate graft copolymer. 3,742,090, Cl. 260-876.00r.

Kiyokuni, Nobuaki: *See—*
Nitto, Yoshio; Kiyokuni, Nobuaki; and Kawasaki, Kikuo, 3,742,246.

Kjelland-Fosterud, Einar, to Sentralinstitutt for Industrielle Forskning. Method of shaping brittle foamed clay by curshing with a blunt roller. 3,742,110, Cl. 264-321.000.

Kjellgren, Ove Allan Valentin, to Alfa-Laval AB. Centrifugal separator. 3,741,467, Cl. 233-41.000.

Klaus, Kaspar. Device for the parking of vehicles on several platforms arranged above each other. 3,741,412, Cl. 214-16.1ed.

Kleffman, Gunter; and Rethmeier, Gerhard, to Anker-Werke AG. Device for selecting the calculating mechanism and controlling the mode of operation of a cash register or printing accounting machine. 3,742,193, Cl. 235-62.00f.

Klein, Harold T.; and Porter, Wilson B., to Robbins Company. Boring machine having internal access feature and disassembly method. 3,741,318, Cl. 173-152.000.

Klein, Larry. Mechanical knife with holding means. 3,740,845, Cl. 30-136.000.

Klein, Willi: *See—*
Witzig, Emil Karl; Frank, Rudolf; and Klein, Willi, 3,741,674.

Kleiner, Walter Gustav; and Hoenig, Ernst Josef, to Stauble AG. Adjuster in the connection path between a shed-forming device and a heddle frame. 3,741,257, Cl. 139-66.00r.

Kleinfelter, Clarence R. Transportable incineration system. 3,741,133, Cl. 110-8.00a.

Kliever, Waldo H.; and Mart, Clyde, said Kliever assor. to said Mart, Clyde. Power driven meat trimming and cutting knife. 3,740,847, Cl. 30-272.00a.

Klink, Wolf Dieter: *See—*
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Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
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Klusmier, Kenneth L., to Morgan Construction Company. Transfer apparatus. 3,741,408, Cl. 214-1.0qg.

Kmiecik, James Edward; and Schulze, Heinz, to Jefferson Chemical Company, Inc. Metal catalyzed cyclization of organic nitriles and amino alcohols or amino thiols. 3,741,961, Cl. 260-243.00r.

Knapp, Wilhelm, to ITT Industries, Inc. Actuating and returning devices for disc brakes. 3,741,350, Cl. 188-72.600.

Knapsack Aktiengesellschaft: *See—*
Krause, Johannes; and Portz, Wilhelm, 3,741,414.

Knechtel, Wilhelm; Petersdorf, Gerhard; and Sandner, Winfried, to Canon Kabushiki Kaisha, mesne. Copying apparatus. 3,741,646, Cl. 355-50.000.

Knight, Robert K.: *See—*
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Knight, Rogers Evert: *See—*
Pass, Peter John; Carr, Douglas Wesley; Knight, Rogers Evert; Gelder, Ronald; Morrell, Moreton; Smith, Leslie William; Harris, Leonard Frederick; and Van Bastelaere, Karel Leon August, 3,741,236.

Knipple, Howard F. Oar bracket. 3,740,780, Cl. 9-1.00r.

Kobayashi, Tetsuo, to Nippon Cable System Inc. Single lever control apparatus for marine engine. 3,741,045, Cl. 74-876.000.

Kobayashi, Yoichi: *See—*
Otsubo, Hiro; Shin, Yoichi; Kobayashi, Yoichi; and Sumiyoshi, Makoto, 3,741,860.

Kobe Steel Ltd.: *See—*
Arikawa, Masayasu; Ohi, Atsushi; Ihochi, Akihiko; and Hashimoto, Kenichiro, 3,742,184.

Koblick, Christian; Muller, Ernst; and Rambold, Klaus, to Siemens Aktiengesellschaft. Pulse transformer for driving thyristors. 3,742,332, Cl. 321-11.000.

Kobylarz, Edward J. Golf gloves. 3,740,766, Cl. 2-161.00a.

Kobyner, Herman H., to Arrow-Hart, Inc. Wire connector. 3,742,431, Cl. 339-272.0vc.

Kocay, Witold R., to Monsanto Company. Polyester meat shroud. 3,741,260, Cl. 139-420.00r.

Kochs Adler AG., mesne: *See—*
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Kocsis, Ferenc: *See—*
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Kocy, Octavian: *See—*
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Koehring Company: *See—*
Clark, Loris D., 3,741,709.

Koeijmans, Gerard D., to Mobil Oil Corporation. Video display system creating both horizontal and vertical sync pulses from the disc time track. 3,742,289, Cl. 315-18.000.

Koga, Toshikuni: *See—*
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Koga, Yukinori: *See—*
Yamamoto, Kiyokazu; Uchida, Yoshihisa; Tanino, Masato; and Koga, Yukinori, 3,740,816.

Kogel, Wilhelm Georg; and Dahlqvist, Bernt Henry Roland, to Aktiebolaget Electrolux. Apparatus for defrosting cooling units of absorption refrigeration systems. 3,740,965, Cl. 62-278.000.

Koh-I-Noor Rapidograph Inc.: *See—*
Danjzcek, William E.; Leuenberger, Jean Pierre; Micale, Fortunato J.; and Wagner, Ralph W., 3,741,668.

Kohl, Alois; and Hartmannsgruber, Rudolf, to Wacker-Werke KG. Apparatus for automatic lubrication of vibration generators. 3,741,344, Cl. 184-69.000.

Kohnke, Richard. Parachute canopy. 3,741,506, Cl. 244-145.000.

Koleske, Joseph V.; and Magnus, George, to Union Carbide Corporation. Poly (oxycaproyl)-polyurethane products. 3,741,918, Cl. 260-2.5ay.

Kollmyer, Robert E.: *See—*
Kupsky, George A.; and Kollmyer, Robert E., 3,742,279.

Komiya, Yoshio, to Canon Inc. Method of manufacturing flexible optical fiber strand for transmitting images and apparatus therefor. 3,741,839, Cl. 156-174.000.

Komori, Shigehiro; Kurahashi, Akira; and Hattori, Hiroyuki, to Canon Kabushiki Kaisha. Wet type developing apparatus. 3,741,093, Cl. 95-89.00r.

Komoto, Hiroshi; Hayano, Fusakazu; and Takami, Toshio, to Asahi Kasei Kabushiki Kaisha. Method for producing bis(4-aminocyclohexyl) alkane. 3,742,049, Cl. 260-563.00d.

Kondo, Chitoshi: *See—*
Mori, Hiroshi; Yamamoto, Michio; Kondo, Chitoshi; Kimoto, Teruhisa; Takahashi, Satoshi; and Ochi, Toshiyuki, 3,742,027.

Kondo, Kenshi. Thermostat. 3,742,416, Cl. 337-392.000.

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Konishi, Tatsuo: *See—*
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Konishi, Yoshihiro, to Nippon Hiso Kyakai. Waveguide component comprising non-linear elements. 3,742,335, Cl. 321-69.00w.

Kono, Masaru: *See—*
Yabe, Masaya; Takahama, Teizo; Kono, Masaru; and Hirono, Katsumi, 3,742,314.
Yabe, Masaya; Kono, Masaru; Takahama, Teizo; and Hirono, Katsumi, 3,742,380.

Konrat, Jean-Paul; and Le Roux, Louis, to Etat Francais Delegation Ministerielle pour l'Armement. Trinitrophenyl chloroformates and carbonate and a process of preparing same. 3,742,011, Cl. 260-463.000.

Kopczynski, John F. Wire twisting machine. 3,740,938, Cl. 57-58.360.

Kopecky, Louis E. Rake device for shag carpets. 3,740,783, Cl. 15-3.000.

Koppe, Herbert; Engelhardt, Albrecht; Ludwig, Gerhard; and Zeile, Karl, to Boehringer Ingelheim G.m.b.H. Novel 1-substituted phenoxy-2-hydroxy-3-isopropylamino-propanes. 3,742,023, Cl. 260-471.00r.

Koppes, David Nelson, to Bell Telephone Laboratories, Incorporated. Apparatus for cleaning waveguide and similar pipes. 3,740,790, Cl. 15-312.00r.

Kordas, Martin W., Jr., to Remington Arms Company, Inc. Expendable shotshell. 3,741,122, Cl. 102-43.00p.

Kornrumpf, William P.; and Harnden, John D., Jr., to General Electric Company. Method and equipment for cooking electronically by specifying watts setting. 3,742,173, Cl. 219-10.410.

Koshi, Ryoichiro; Barozzi, Gian Piero; and Horeschi, Giancarlo, to Citizen Watch Co., Ltd. Adding machine. 3,741,470, Cl. 235-60.0tk.

Kosonocky, Walter Frank: *See—*
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Kotone, Eimatsu, to Nippon Pneumatic Manufacturing Co. Impact wrench. 3,741,319, Cl. 173-163.000.

Kowalik, John J., to International Harvester Company. Close coupled frame steered all crawler tractor. 3,741,331, Cl. 180-9.440.

Koyano, Akio, to Sumitomo Special Metal Company Limited. Piezoelectric ceramics. 3,741,899, Cl. 252-62.900.

Kozheurov, Vsevolod Rodionovich; Berezin, Leonid Georgievich; Safarov, Georgy Samuilovich; and Bulgakov, Petr Lavrentievich. Mould for the production of metal ingots. 3,741,280, Cl. 164-250.000.

Kozusnik, Karel, to Sigma Lutin, narodni podnik. Method for manufacturing pump spindle. 3,740,811, Cl. 29-156.400.

Krasso, Anna: *See—*
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Kraus, James R.: *See—*
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Krause, Johannes; and Portz, Wilhelm, to Knapsack Aktiengesellschaft. Installation for cooling calcium carbide run off into vessels. 3,741,414, Cl. 214-44.00r.

Krause, Konrad A., to International Business Machines Corporation. Electrophotographic plate cleaning apparatus. 3,741,157, Cl. 118-637.000.

Krautkramer, J. u. H., Dr., Gesellschaft fur Elektrophysik: *See—*
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Krellen, Norman L. Contact lens case. 3,741,377, Cl. 206-5.00a.

Krembs, George M., to International Business Machines Corporation. Capacitive-coupled connectors for gaseous discharge display panels. 3,742,296, Cl. 315-169.00r.

Kremser, Fritz: *See—*
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Krenzer, John; and Richter, S. B., to Velsicol Chemical Corporation. N-Cycloalkylthiocarbonyloxy-substituted N-phenylures. 3,742,008, Cl. 260-455.00b.

Kripak, Leonid M.: *See—*
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Kronies, Reinard Kurt, to Burroughs Corporation. Three state logic device with applications. 3,742,253, Cl. 307-247.000.

Krosby, Johannes Anders, to Kvaerner Brugs Kjoleavdeling A/S. Circulation pump for refrigeration plant. 3,741,688, Cl. 417-372.000.

Kroy Knitting Developments Limited: *See—*
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Krumm, Charles G.: *See—*
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Krysiuk, Genadij; and Meier, Johann H., to International Business Machines Corporation. Position controlling system. 3,741,357, Cl. 192-12.00d.

Kubo, Moritada; Asano, Kumiji; and Obama, Masao, to Tokyo Shibaura Electric Co., Ltd. Noncontact electric apparatus for magnetically measuring strains. 3,742,357, Cl. 324-34.0st.

Kubo, Noriyoshi: *See—*
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Kubo, Seitoku: *See—*
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Kubota, Masaichi; Yamamura, Taro; Kawai, Atsushi; Katsuyama, Takehiro; Ikeda, Masamichi; and Omoto, Seiichi, to Mitsubishi Rayon Co., Ltd. Highly crimped polynosic fibers. 3,741,862, Cl. 161-173.000.

Kuethe, Arnold M. Boundary layer control of flow separation and heat exchange. 3,741,285, Cl. 165-1.000.

Kuh, Stephen J., to Dow Chemical Company, The. 2-(Alpha,alpha-bis(trifluoromethyl)benzyloxy) acetic acid and esters thereof. 3,742,043, Cl. 260-521.00a.

Kuhnle, Paul; Caukler, Fritz; and Gassmann, Willy, to Fr. Hesser Maschinenfabrik Aktiengesellschaft. Bag forming and manipulating machine. 3,741,080, Cl. 93-8.00r.

Kulhanek, Willy Paul, to General Tire & Rubber Company, The. Method of improving paint adhesion to low-shrink polyester-based resins. 3,741,799, Cl. 117-138.80f.

Kull, Leo; and Landis, Bruce B., to Rowe International Inc. Fifth leg for merchandising machine cabinet. 3,741,620, Cl. 312-276.000.

Kumada, Shoji; and Tanaka, Tadashi, to Kabushiki Kaisha Yaskawa Denki Seisakusho. Method of producing a coreless armature. 3,740,836, Cl. 29-598.000.

Kume, Toyohiko: *See—*
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Kuntz, Charles H. Projector device for drawing. 3,741,624, Cl. 350-121.000.

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Kupsky, George A.; and Kollmyer, Robert E., to Burroughs Corporation. Segmented electrode display panel having closed structure. 3,742,279, Cl. 313-109.500.

Kurahara, Koji: *See—*
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Kuroda, Shigeharu. Method for producing a seamless tubing. 3,742,105, Cl. 264-89.000.

Kurshan, Robert Paul: *See—*
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Kyle, Robert C., to Minnesota Mining and Manufacturing Company. Barrel cleaning device. 3,740,883, Cl. 42-1.00r.

La Bahn, William C.: *See—*
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Laakmann, Peter, to Hughes Aircraft Company. High speed small deflection interlace mirror. 3,742,234, Cl. 250-235.000.

Lacey, Benjamin R. Short finder with a pair of indicators having different resistance values and actuated by different current magnitudes. 3,742,345, Cl. 324-52.000.

Lacey, Edward H. Irrigation hose coupling and pull end. 3,741,238, Cl. 137-344.000.

Lacheta, Ireneusz: *See—*
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Lagally, Ralph W.; and Schulz, Johann G. D., to Gulf Research & Development Company. Preparation of amines. 3,742,060, Cl. 260-585.00a.

Laguilharre, Pierre Robert. Drying installation. 3,740,865, Cl. 34-57.00e.

Lahmann, Rank-Dieter: *See—*
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Laing, Nikolaus. Radiation incidence control means. 3,741,631, Cl. 350-267.000.

Laing, Nikolaus. Separating wall for magnetic machine. 3,741,690, Cl. 417-420.000.

Laird, George A.: *See—*
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Land, Cecil E.: *See—*
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Landen, William James, to Eyelet Specialty Company. Bottle closure. 3,741,424, Cl. 215-43.00r.
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Lane, Clyde H., to United States of America, Air Force. Method for packaging hybrid circuits. 3,740,920, Cl. 53-39.000.
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Lange, Werner, to VEB Pentacon Dresden Kamera- und Kinowerke. Apparatus for feeding the pile board of a sheet separating device. 3,741,537, Cl. 271-61.000.
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Lanphere, Ralph C.; and Elton, Robert L., to Case, J. I., Company. Combination sign board and truck removable wall. 3,740,882, Cl. 40-129.00c.
Lapkin, Milton, to Olin Corporation. Flame retardant polyurethane foams based on polyether from 4,4,4-trichloro-1,2-epoxybutane. 3,741,921, Cl. 260-2.5as.
LaPointe, Andre' E., to United States of America, Navy. Stabilized rocket head. 3,741,125, Cl. 102-49.400.
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Latall, Roy C., to O'Brien Manufacturing Company, Inc. Hydraulic sewer pipeline cleaner. 3,740,785, Cl. 15-104.12.
Lau, Dicksen T. W. Racing dragon boat. 3,740,781, Cl. 9-25.000.
Lauer, Robert J., to Reliance Electric Company. Elevator car stopping status evaluation means. 3,742,445, Cl. 340-19.00r.
Lawrence, John Theodore: *See—*
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Lawson, Peter James; and Kocsis, Ferenc, to Besson, A. P., & Partner Limited. Tone device having positive feedback common emitter amplifier. 3,742,491, Cl. 340-384.00e.
Lazarus, Alan R. Headboard support. 3,740,776, Cl. 5-296.000.
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Leadbetter, Orren R. Shelf extender. 3,741,131, Cl. 108-97.000.
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Lear Siegler, Inc.: *See—*
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Leathers, Chester F. Low inductance unit particularly for electric welders. 3,742,334, Cl. 321-57.000.
Leavitt, Minard A.; and Roulund, Poul B., to Culter-Hammer, Inc. Film handling method and apparatus. 3,741,650, Cl. 355-91.000.
Lebeau, Rene D., to Woodworking Engineering & Machinery Co., Inc. Sound reducing unit for machinery. 3,741,335, Cl. 181-33.00k.
Lebedeva, Valentina Grigorievna: *See—*
Chaplygin, Igor Jurievich; Mitjushin, Dmitry Nikolaevich; Zapolnov, Dmitry Petrovich; Karamzina, Natalia Nikolaenva; Lebedeva, Valentina Grigorievna; and Lomagina, Irina Mikhailovna, 3,741,531.
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Lee, Chi-Hang, to General Foods Corporation. Meat-type aromas and their preparation. 3,741,775, Cl. 99-140.00r.
Lee, Hue R. Vehicle with detachable auxiliary parts. 3,741,605, Cl. 296-10.000.
Lee, Lewis R.; Whybro, Robert S. D.; and Bennett, William A., to Ford Motor Company. Vehicle carrying an implement. 3,741,415, Cl. 214-138.00c.
Lee, Raymond, Organization, Inc., The: *See—*
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Lefevre, George; and Angelie, Philippe, to Societe d'Etudes Recherches et Constructions Electroniques (S.E.R.C.E.L.). Sample amplifiers having automatic regulation of the amplification factor by discrete values. 3,742,489, Cl. 340-347.0ad.
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Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. Process for the preparation of aminomethylene malononitrile. 3,742,015, Cl. 260-465.50r.
LeJeune, Pierre, to Creusot-Loire. Apparatus for making a continuous sheet by filtration of particles in suspension in a liquid. 3,741,865, Cl. 162-317.000.
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Levinger, Paul, to Pale Corporation. Watch end. 3,740,804, Cl. 24-265.0ws.
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Murman, Fernando; Lewis, George E.; Dunn, Allen I.; and O'Brien, Charles E., 3,741,296.
Lewis, Morton, to Swift & Company. Urethane composition prepared from polyisocyanates and phosphonated polyoxyalkylene ester. 3,741,919, Cl. 260-2.5ar.
Lewis, Owen, to United States of America, Air Force. Vertical tapeline microwave coupler for paramagnetic spin resonance. 3,742,399, Cl. 333-82.00r.
Leyde, Warren L.; and Marker, Delbert E., to Republic Industries, Inc. Automatic door-opening system using an acoustic object detection system. 3,742,434, Cl. 340-1.00r.
Leyde, Warren L.; and Marker, Delbert E., to Pacific Technology, Inc. Acoustic object detection system. 3,742,442, Cl. 340-15.000.
LFE Corporation (formerly Laboratory for Electronics Inc.): *See—*
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Liden, Sam P., to Sperry Rand Corporation. CMG fine attitude control system. 3,741,500, Cl. 244-1.0sa.
Liebermann, Leonard N.; and Lai, Stanley H., to TIF Instruments, Inc. Gaseous impurity detector employing corona discharge phenomenon. 3,742,475, Cl. 340-237.00r.
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Limoni, Uri, to Slant/Fin Corporation, The. Self-adjusting support clip for finned tube baseboard radiators. 3,741,291, Cl. 165-55.000.
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Lindstrom, Wictor Carl Olof. Carton erecting apparatus. 3,741,084, Cl. 93-51.00r.
Ling, Bernt; and Persson, Anders, to Allmanna Svenska Elektriska Aktiebolaget. Means for determining the existence of an object within a predetermined range interval. 3,741,655, Cl. 356-5.000.
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Lipschutz, Paul, to Societe d'Exploitation des Brevets Neiman. Electric switch assembly and combination thereof with safety locks. 3,742,161, Cl. 200-44.000.
Liquid Controls Corporation: *See*—
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Lockwood, Harry Francis; and Ettenberg, Michael, to RCA Corporation. Method of depositing an epitaxial semiconductor layer from the liquid phase. 3,741,825, Cl. 148-171.000.
Loctite (Ireland) Limited: *See*—
O'Sullivan, Denis Joseph, 3,742,018.
Lode, Tenny D., to Electronic Processors, Inc. Means for the reliable transmission of digital signals across slip rings and the like. 3,742,468, Cl. 340-174.10b.
Logan, Jonathan: *See*—
Venot, Jean V., 3,741,490.
Logemann, George H.: *See*—
Henschke, Ernest J.; Logemann, George H.; Moorad, Stanley; and Savio, Lino P., 3,741,410.
Lomagina, Irina Mikhailovna: *See*—
Chaplygin, Igor Jurievich; Mitjushin, Dmitry Nikolaevich; Zapolnov, Dmitry Petrovich; Karamzina, Natalia Nikolaenva; Lebedeva, Valentina Grigorievna; and Lomagina, Irina Mikhailovna, 3,741,531.
Lommel, James M., to General Electric Company. Method of forming first order transition films. 3,741,823, Cl. 148-103.000.
Longcoy, Richard L.: *See*—
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Longwell, John P.: *See*—
Spenadel, Lawrence; and Longwell, John P., 3,741,832.
Lonnebotn, Trygve: *See*—
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Lonza Ltd.: *See*—
Arni, Urs; Faucci, Adriano; and Stocker, August, 3,742,020.
Stocker, August; Marti, Othmar; Pfammatter, Theodul; and Schreiner, Gerhart, 3,741,976.
Looker, Brian Edgar; Attenburrow, John; and Wilson, Edward McKenzie, to Glaxo Laboratories Limited. Acylation of 7-aminocephalosporin or 6-aminopenicillin. 3,741,959, Cl. 260-239.100.
Loomis, Charles M. Gauge frame for elevator shaft entrance opening. 3,740,907, Cl. 52-205.000.
Looschen, Floyd W., to Burroughs Corporation. Data processing method and apparatus adapted to sequentially pack error correcting characters into memory locations. 3,742,459, Cl. 340-172.500.
Looser, Hanspeter: *See*—
Fenner, Hans; and Looser, Hanspeter, 3,742,455.
Lopez, Antonio R. Automatic animal feeding machine. 3,741,162, Cl. 119-51.130.
Lopez, Walfrido R. Double loaded spear gun. 3,741,190, Cl. 124-22.000.
L'Oreal: *See*—
Gregoire, Kalopissis; Andres, Bugaut; and Vahn, Zorayan, 3,742,048.
Kalopissis, Gregoire, 3,741,723.
Loughridge, Frederick A., to GTE Sylvania Incorporated. Press seal for lamp having fused silica envelope. 3,742,283, Cl. 313-318.000.
Louis, Anthony, to Aquaria, Inc. Method of connecting two members with an elastomeric hinge. 3,741,843, Cl. 156-244.000.
Louthen, Rector P.: *See*—
Williams, Ralph P.; and Louthen, Rector P., 3,741,834.
Lovingham, Joseph J., to Thiokol Chemical Corporation. Injector for rocket motors using high viscosity fuel. 3,740,945, Cl. 60-204.000.
Lowe-Opta GmbH: *See*—
Meurer, Heinz Hubert; and Kanow, Willy, 3,742,362.
Lubarsky, Daniel P., to Larie Corporation. Binary code communication system. 3,742,199, Cl. 235-154.000.
Lucas, Joseph, (Industries) Limited: *See*—
Beasley, Maurice Trevor, 3,741,704.
Hillyard, Peter Thomas, 3,742,312.
Parsons, Nicholas Tyers, 3,741,021.
Sparks, Brian Edmund, 3,741,477.
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Ludwig, Gerhard: *See*—
Koppe, Herbert; Engelhardt, Albrecht; Ludwig, Gerhard; and Zeile, Karl, 3,742,023.
Luebbe, Ray H., Jr.; Byrne, John F.; and Greeno, Thomas M., to Xerox Corporation. Manifold imaging member and process. 3,741,762, Cl. 96-1.500.
Luedtke, Lloyd A. Tractor pulling device. 3,741,010, Cl. 73-141.00r.
Lutz, Virgil L., to International Paper Company. Carton slicer. 3,741,081, Cl. 93-36.00r.
Luzader, James E.: *See*—
Heller, Paul R.; Ying, Sui-Chun; and Luzader, James E., 3,742,266.
Ly, Manuel G.: *See*—
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Lyman, John B.; and Turner, Phillip H., to Whirlpool Corporation. Water control for ice maker. 3,740,963, Cl. 62-66.000.
Lyn-Weld Company, Inc.: *See*—
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Lyzwinski, Ryszard: *See*—
Prajsnar, Tadeusz; Rulinski, Jozef; Zglobicki, Edward; Lyzwinski, Ryszard; Lacheta, Ireneusz; Szczepanik, Aleksander; Piaskowski, Stanislaw; and Godyn, Adam, 3,740,990.
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MacKenzie, David D. Garment hanger. 3,741,449, Cl. 223-91.000.
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MacNary, Robert G.: *See*—
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Baumann, Frederick W.; La Bahn, William C.; MacNary, Robert G.; and Miller, Albert R., 3,741,707.
Maddalozzo, Raymond J., to International Harvester Company. Engine oil cooling and filtering method and apparatus. 3,741,342, Cl. 184-6.400.
Magara, Yoshio: *See*—
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Magni-Case, Inc., mesne: *See*—
Brown, Robert G.; and Grant, Gene Louise, 3,741,376.
Magnier, Roger, to Regie Nationale des Usines Renault and Automobiles Peugeot. Synchronizers. 3,741,358, Cl. 192-53.00f.
Magnus, George: *See*—
Koleske, Joseph V.; and Magnus, George, 3,741,918.
Mahler, Gert; and Meissner, Wolfgang, to Gebr. Happich G.m.b.H. Bearing, particularly for vehicle sun visor. 3,741,616, Cl. 308-237.000.
Mainland, Charles M., to United States Smelting, Refining and Mining Company. Method for making metal alloys. 3,741,754, Cl. 75-135.000.

Makin, Brian: *See—*
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Malcomson, Robert S.: *See—*
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Mallett, Gordon E., to Lilly, Eli, and Company. Method of preparing delta 9 (11)-estrone. 3,741,870, Cl. 195-51.00f.
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Mallow, William A.; Owen, Richard A.; and Baker, Ethelbert J., Jr., to Southwest Research Institute. Foamed product from sodium silicate and process of manufacture thereof. 3,741,898, Cl. 252-62.000.
Malmquist, Leo: *See—*
Wikstrom, Stellan Brynolf; and Malmquist, Leo, 3,742,177.
Malosh, James B., to Tenneco, Inc. Expansion type silencer. 3,741,336, Cl. 181-54.000.
Maltsev, Vladimir Vasilievich: *See—*
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Maly George P.; and Robinson, Joel P., to Union Oil Company of California. Tool for gravel packing wells. 3,741,301, Cl. 166-191.000.
Mani, Richard L., to Comprehensive Health Testing Laboratories, Inc. Method and system for recording, processing and displaying visually observed information from physical structure. 3,741,471, Cl. 235-61.90r.
Manning, David Roger: *See—*
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Mapes, Carl R.: *See—*
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Marand, Jean, to Ciba-Geigy Corporation. Dispensing system with propellant metering valve. 3,741,443, Cl. 222-145.000.
Marand, Jean, to Ciba-Geigy Corporation. Low pressure product container dispensing valve. 3,741,446, Cl. 222-402.240.
Marbach, Walter V.: *See—*
Urbutis, Algimantas P.; Schenk, Bernard H.; Risany, Joseph J.; and Marbach, Walter V., 3,741,779.
Maremont Corporation: *See—*
Drake, William H., 3,740,937.
Margerum, John D., to Hughes Aircraft Company. Method of controlling the intensity of a light beam using photochromic compounds. 3,741,628, Cl. 350-160.00p.
Margraff, Rodolphe: *See—*
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Mark Products, Inc.: *See—*
Riley, Travis E., 3,742,441.
Markakis, Michael J., to SCM Corporation. Cyclic drum printer. 3,741,086, Cl. 95-4.500.
Marker, Delbert E.: *See—*
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Leyde, Warren L.; and Marker, Delbert E., 3,742,442.
Markolf, Keith L.; and Harris, Norman M. Bone fixation plate. 3,741,205, Cl. 128-92.00b.
Marley, Thomas C., to Cincinnati Milacron Inc. Analog to digital conversion apparatus for use with tracing system to produce a stored program therefrom. 3,742,200, Cl. 235-154.000.
Marlin, Louis A.: *See—*
Patton, Richard S.; Keyser, Naaman H.; Langdon, Vernon L.; Beaucaire, Victor D.; and Marlin, Louis A., 3,740,859.
Marrese, Richard J.; Edwards, Gordon C.; and Zielinski, James, to Esso Research and Engineering Company. Method of regulating plant growth. 3,741,746, Cl. 71-72.000.
Marriott, Eric Walter: *See—*
Blood, Raymond; and Marriott, Eric Walter, 3,740,973.
Marshall, Calvert D. Stud extractor. 3,740,814, Cl. 29-200.00d.
Mart, Clyde: *See—*
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Marti, Othmar: *See—*
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Martin, Jon W.; Jones, John F.; and Bell, Jeffrey L., to TRW Inc. Polyolefin rubbers reacted with butadiene resins. 3,741,931, Cl. 260-41.50r.
Martin, Norman W. Timed fuel injection system. 3,741,181, Cl. 123-139.0aw.
Martin, Stephen J., to Hunter Electronics, Inc. Remote meter reader system. 3,742,142, Cl. 179-2.00a.
Martzloff, Francois D., to General Electric Company. Integral sensor for monitoring a metal oxide varistor. 3,742,419, Cl. 338-20.000.
Maruzen Oil Company Limited: *See—*
Iwakura, Yoshio; Uno, Keikichi; and Niume, Kazuma, 3,741,938.
Marzocchi, Alfred; and McAuslan, Robert R., to Owens-Corning Fiberglas Corporation. Method of producing vulcanizable sheet material with multifilament glass cord. 3,741,837, Cl. 156-171.000.
Maschinen- und Bohregeratefabrik Alfred Wirth & Co., KG: *See—*
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Maschinot, Howard R., to Printing Machinery Company, The. Hydraulic label die cutting machine. 3,741,057, Cl. 83-222.000.
Mascioli, Rocco L.; and Petrella, Robert G., to Air Products and Chemicals, Inc. Flame retardant comprising supported amitmony tetroxide. 3,741,893, Cl. 252-8.000.
Mason Research Institute Inc.: *See—*
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Massachusetts Institute of Technology: *See—*
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Masuzawa, Isao: *See—*
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Matona, Hirokuni: *See—*
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Matsuda, Ryoichi; Terai, Masaaki; and Hojyo, Yasuo, to Nippon Telegraph and Telephone Public Corporation. Telephone circuit for side tone balance and automatic transmission level adjustment. 3,742,153, Cl. 179-81.00a.
Matsuda, Shogo: *See—*
Kakutani, Tsutomu; Hirata, Tetsuhiko; Matsuda, Shogo; Inagaki, Kenji; and Innami, Hidetoshi, 3,741,857.
Matsumoto, Seiji; Honjo, Satoru; Sato, Masamichi; and Fukushima, Osamu, to Xerox Corporation. Original position confirming means for duplicating apparatus. 3,741,644, Cl. 355-40.000.
Matsuno, Hideo: *See—*
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Matsuno, Mitsuo: *See—*
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Higashiyama, Kenji; and Hirata, Hiroshi, 3,741,883.
Ichinohe, Eisuke; Kubo, Noriyoshi; Nakamura, Kazuhiro; Endo, Yoshinori; and Katano, Takeshi, 3,742,262.
Nishiyama, Akira; Izura, Yoshiteru; Tanaka, Masaaki; Takashima, Yuji; and Noguchi, Toyota, 3,741,651.
Yamamoto, Kiyokazu; Uchida, Yoshihisa; Tanino, Masato; and Koga, Yukinori, 3,740,816.
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Matthews, Benjamin H., to Lucerne Products, Inc. Reversing switch lever. 3,742,364, Cl. 200-157.000.
Matthews, Roy S.; and Willis, Billy E., to Continental Carbon Company. Water-cooled burner and feedstock injection assembly for carbon black reactor. 3,741,165, Cl. 122-6.500.
Matto, Lawrence R.: *See—*
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Matulewicz, Leonard A., to Owens-Corning Fiberglas Corporation. Apparatus for producing a stream feeder. 3,741,460, Cl. 228-5.000.
Mauger, Leroy: *See—*
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Maul Bros., Inc.: *See—*
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Maul, John A.; and Anderson, David D., to Addressograph-Multigraph Corporation. Detent means for settable print wheels. 3,741,114, Cl. 101-110.000.
Maxwell, Douglas H.; and Gabriel, James M., to United Aircraft Corporation. Slurry coating superalloys with FeCrAly coatings. 3,741,791, Cl. 117-46.0ca.
May, Oswald, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method of and device for controlling multistage change gear transmissions. 3,741,035, Cl. 74-745.000.
Mayer-Mader, Rudolf; and Dinges, Karl, to Bayer Aktiengesellschaft. Stabilized 2,3-dichloro-1,3-butadiene. 3,742,075, Cl. 260-652.500.
Mayhew, Donald J., to Ramsey Corporation. Oil control piston ring. 3,741,569, Cl. 277-140.000.
Mayo, Victor S., to Lee, Raymond, Organization, Inc., The. Apparatus for teaching writing. 3,740,872, Cl. 35-37.000.
Mazanek, Alfonso J.: *See—*
Bell, Kenneth B.; Brutt, Frederick J.; and Mazanek, Alfonso J., 3,742,158.
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Mc Farlin, Stanley B.: *See—*
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Mc Figgans, Robert B.; and Jones, Howell A., Jr., to Pitney-Bowes, Inc. Apparatus for selectively formatting serial data bits into separate data characters. 3,742,456, Cl. 340-172.500.
McAllister, Jack G., to Centuri Engineering Company, Inc. Igniter. 3,741,120, Cl. 102-34.000.
McAlpine, Charles H.; and McGowan, Kenneth G., to Mac Engineering & Equipment Co. Transfer mechanism for battery grids. 3,741,365, Cl. 198-27.000.
McAlpine, Ian: *See—*
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McAuslan, Robert R.: *See—*
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McConnell, Kennedy; and Juechter, Raymond F., to Interlake, Inc. Load lock. 3,741,405, Cl. 211-177.000.
McCosker, Doris C. Sanitary face mask. 3,740,768, Cl. 2-174.000.
McCoy, Wyn E.: *See—*
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McCracken, Philip G.: *See—*
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McCrobie, George L., to Xerox Corporation. Add lens projection system with balanced performance. 3,741,621, Cl. 350-183.000.
McCulloch, Alister L., to Graviner (Colnbrook) Limited. Automatic fire extinguisher systems. 3,741,309, Cl. 169-2.00r.
McCurry, Robert E.: *See—*
Cavanaugh, Lawrence R.; and McCurry, Robert E., 3,742,516.
McDonald, John William, to Du Pont de Nemours, E. I., and Company. Water-repellent ethylene copolymer dispersions. 3,741,925, Cl. 260-28.50r.
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McDonnell Douglas Corporation: *See—*
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McFarland, Archie Rae. Process for producing de-boned meat products. 3,741,772, Cl. 99-107.000.
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McGill, Howard L., to Schlumberger Technology Corporation. Retrievable well packer apparatus. 3,741,304, Cl. 166-216.000.
McGowan, Kenneth G.: *See—*
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McIlvried, Howard G.: *See—*
Beuther, Harold; Chun, Sun W.; Hamilton, Harry A.; and McIlvried, Howard G., 3,741,888.
McInally, John A., to Xerox Corporation. Controlled spectrum flash lamp. 3,742,281, Cl. 313-184.000.
McInnes, Alexander G. P.: *See—*
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McIver, Robert T., Jr., to Leland Stanford Junior University, The, Board of Trustees of the. Method and apparatus for pulsed ion cyclotron resonance spectroscopy. 3,742,212, Cl. 250-41.9ds.
McKelvey, William John: *See—*
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McKenzie, Robert J. Apparatus for stabilizing a barge. 3,740,957, Cl. 61-48.000.
McKenzie, Robert K., to Morton Manufacturing Company. Curved sliding door assembly. 3,740,898, Cl. 49-409.000.
McKinley, David W.; and Parmerlee, James K., to United States of America, Navy. Bi-stable brake. 3,741,353, Cl. 188-171.000.
McKinley, Larry E.; Johnson, Clarence S.; and Langille, Justin E., III, to United States of America, Navy. Hull inspection platform. 3,741,143, Cl. 114-.500.
McKinney, Ira D.: *See—*
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McLaren, Vincent H., Jr.; and Pnachal, Navnit, to Imperial Knife Associated Companies, Inc. Electric can opener with can sensing means. 3,740,840, Cl. 30-4.00r.
McLaughlin, Thomas A.; Swithenbank, Colin; and Yih, Roy Y., to Rohm & Haas Company. 3,5-Dichloro-N-(1,1,dimethyl-2-propynyl) benzimidoyl halides and derivatives. 3,742,051, Cl. 260-566.00d.
McLean, Michael B., to Johnson Service Company. Voltage to frequency converter. 3,742,379, Cl. 331-111.000.
McLean, Ralph M., Jr. Locking plate for axle end cap. 3,741,603, Cl. 295-36.00r.
McMullen, Wayne W. Hydraulic control. 3,742,164, Cl. 200-83.00r.
McPhail, Hazel M.: *See—*
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McPhail, William B.; and McPhail, Hazel M. Table game with target ball and spheroidal curling bowls. 3,741,543, Cl. 273-118.00r.
McTamaney, Louis S.; and Begun, Robert A., to FMC Corporation. Liquid level control system. 3,741,683, Cl. 417-7.000.
Meade, Reginald E., to Pillsbury Company, The. Spray drying apparatus. 3,741,273, Cl. 159-4.00r.
Meadows, Lacy C.: *See—*
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Meier, Jean: *See—*
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Meinunger, Helmut, to Gizeh-Werk G.m.b.H. Cigarette-making appliance. 3,741,220, Cl. 131-70.000.
Meissner, Wolfgang: *See—*
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Melin, Thomas N. Load handling in fork lift trucks. 3,741,420, Cl. 214-750.000.
Mercaldi, William B., to USM Corporation. Pattern controlled feed mechanism. 3,741,140, Cl. 112-102.000.
Mercier, Jacques H. Pressure vessel. 3,741,250, Cl. 138-30.000.
Merck & Co., Inc.: *See—*
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Merry Companies Incorporated: *See—*
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Mesta Machine Company: *See—*
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Metal Cutting Tools, Inc.: *See—*
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Metayer, Albert, to Etablissements Metayer & Cie. Piece of furniture adapted to be converted from a seat into a bed. 3,740,775, Cl. 5-13.000.
Meuleman, Johannes, to U.S. Philips Corporation. Method and apparatus for a semiconductor radiation detector. 3,742,215, Cl. 250-83.00r.
Meurer, Heinz Hubert; and Kanow, Willy, to Lowe-Opta GmbH. Signal-seeking communications receiver with bidirectional frequency sweep capability. 3,742,362, Cl. 325-470.000.
Meyer, Burton C.: *See—*
Glass, Marvin I.; Kripak, Leonid M.; and Meyer, Burton C., 3,740,896.
Meyer, Engelbert A., to USM Corporation. Fastener. 3,740,800, Cl. 24-73.0hs.
Meyer, Engelbert A., to USM Corporation. Decorative trim strip, fastener, and method of making same. 3,740,918, Cl. 52-717.000.
Meyer, Erich, to Optima-Maschinenfabrik Inhaber Dr. Max Buhler. Device for closing bags. 3,740,921, Cl. 53-112.00b.
Meyer, Fred, of California: *See—*
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Michaelson, Dennis M., to Pan-Technic, Inc. Electronic rotary hammer. 3,742,322, Cl. 318-122.000.
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Moore, Charles H., Sr. Process for producing hollow forging with frusto-conical exterior and interior surfaces. 3,740,993, Cl. 72-370.000.
Moore, John W., to Swan Corporation. Wall paneling. 3,740,908, Cl. 52-261.000.
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Moran, Thomas M., to Eaton Corporation. Fastening assembly. 3,741,067, Cl. 85-72.000.
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Mori, Hiroshi; Yamamoto, Michio; Namie, Koshi; and Kimoto, Teruhisa, to Teijin Hercules Chemical Company, Limited. Stabilization of thermally unstable DMT with BHET. 3,742,026, Cl. 260-475.00b.
Mori, Hiroshi; Yamamoto, Michio; Kondo, Chitoshi; Kimoto, Teruhisa; Takahashi, Satoshi; and Ochi, Toshiyuki, to Teijin Hercules Chemical Company, Limited. Stabilization of thermally unstable DMT by mixture of C_1-C_4 alkanol material and certain cobalt salt material. 3,742,027, Cl. 260-475.00b.

Mori, Yoichi, to Nissan Motor Company, Limited. Hydrostatic power transmission system. 3,740,951, Cl. 60-465.000.
Mori, Yoichi, to Nissan Motor Company, Limited. Hydrostatic power transmission system. 3,740,953, Cl. 60-489.000.
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Morlock, Elizabeth Benz; Albright, Jay Donald; and Goldman, Leon, to American Cyanamid Company. Derivatives of 4a,9b-dihydro-8-9b-dimethyl-dibenzofuran-3(4H)-one. 3,741,992, Cl. 260-346.20m.
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Murman, Fernando; Lewis, George E.; Dunn, Allen I.; and O'Brien, Charles E., to Hydril Company. Replacement of sub-sea blow-out preventer packing units. 3,741,295, Cl. 166-.600.
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Newman, Albert L., to Singer Company, The. Sewing machine cases. 3,741,618, Cl. 312-208.000.
Newman, Albert P., to Empire Products, Inc. Terminal housing. 3,742,119, Cl. 174-65.00r.
Newman, Edward Arthur; Pay, Brian Edward; and Manning, David Roger, to National Research Development Corporation. Vowel recognition apparatus. 3,742,146, Cl. 179-1.0sa.
Newman, Owen G., to Sverdrup & Parcel and Associates, Inc. Method and apparatus for servicing counterbalanced lifting device. 3,740,782, Cl. 14-42.000.
Newton, William J.: *See—*
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Nickel, George H., to United States of America, Air Force. Acoustic beam splitter for infrared lasers. 3,741,648, Cl. 356-51.000.
Nickerson, Douglas W., to Motorola, Inc. Selective signalling apparatus with storage of call signals. 3,742,481, Cl. 340-311.00r.
Nicol, Ronald; and Davis, Ralph B., to Heinemann Electric Company. Circuit breaker with on, off, and trip indication. 3,742,402, Cl. 335-13.000.
Nicol, Ronald, to Heinemann Electric Company. Circuit breaker with on, off, and trip indication. 3,742,403, Cl. 335-13.000.
Niebur, Bernard R.; and Peters, Thomas W., to Outboard Marine Corporation. Engine starter mechanism. 3,741,187, Cl. 123-179.00k.
Niederberger, Richard P.: *See—*
Dafler, James R.; and Niederberger, Richard P., 3,741,810.
Nield, Eric, to Imperial Chemical Industries Limited. Thermoplastic blends of aromatic polysulfones and thermoplastic polyesters. 3,742,087, Cl. 260-860.000.
Nielsen, A. C., Company: *See—*
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Haselwood, Donald E.; and Solar, Carl M., 3,742,463.
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Nippon Electric Company, Limited: *See—*
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Nishiyama, Akira; Izura, Yoshiteru; Tanaka, Masaaki; Takashima, Yuji; and Noguchi, Toyota, to Matsushita Electric Industrial Co., Ltd. Recording device. 3,741,651, Cl. 355-100.000.
Nissan Motor Company, Limited: *See—*
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Mori, Yoichi, 3,740,953.
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Nitto, Yoshio; Kiyokuni, Nobuaki; and Kawasaki, Kikuo, to Fuji Denki Seizo Kabushiki Kaisha. Control device for a circuit breaker. 3,742,246, Cl. 307-143.000.
Niume, Kazuma: *See—*
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Nobusawa, Tsukumo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Photosensitive system for responding to different luminosites of an object. 3,741,088, Cl. 95-10.0ct.
Nochea, Viola-Nereida Gutierrez, to Ferquerea, Jose Materno Gutierrez y. Pencil sharpener. 3,741,265, Cl. 145-3.610.
Nodera, Katsuji: *See—*
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Nordsiek, Karl-Heinz; Sommer, Neithart; and Schwesig, Helmut, to Chemische Werke Huls Aktiengesellschaft. Tread strips for tires formed of homopolymers of butadiene. 3,741,927, Cl. 260-33.6aq.
Nordstrom, Kjell Helge; and Flinth, Rune Nils Allan. Weighing device. 3,741,327, Cl. 177-163.000.
Norris, Leon F.: *See—*
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Novak, Kurt. Heat therapy apparatus. 3,741,218, Cl. 128-373.000.
Novak, Larrence L.: *See—*
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Novak, Mick: *See—*
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Nowicki, Raymond M. Automobile and truck carburator air intake filters. 3,740,931, Cl. 55-274.000.
Nu-Concept Computer Company: *See—*
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Nuclear Power Group Limited, The: *See—*
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Obama, Masao: *See*—
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Ochs, John. Device for securing and tensioning coiled springs. 3,741,558, Cl. 267-73.000.
Odajima, Toru: *See*—
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Odell, Arthur W.: *See*—
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Odetics, Inc.: *See*—
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Oelschlaeger, Daniel J., to Display Corporation International. Device for displaying price information. 3,740,878, Cl. 40-28.00c.
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Ogle, James A., to Burroughs Corporation. Video display system using display panel. 3,742,483, Cl. 340-324.00m.
Ogura, Katsuyuki: *See*—
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Ohata, Susumu, to Yokogawa Electric Works, Inc. Closed loop stepping motor servo-mechanism. 3,742,328, Cl. 318-685.000.
Ohi, Atsushi: *See*—
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Sugiyama, Mitsunori; Ohi, Reiichi; Shishido, Tadao; and Omura, Masaki, 3,741,950.
Ohlson, John L.; Scanlon, Patricia M.; and Gaudette, Roger R., to Grace, W. R., & Co. Iron chelates useful for supplying iron to plants growing in calcareous soil. 3,742,002, Cl. 260-439.00r.
Ohmura, Hiroshi, to Fuji Photo Film Co., Ltd. Single blade electric shutter. 3,741,091, Cl. 95-59.000.
Ohno, Richard J., to Sargent and Company. Protective guard for a mortise type lock. 3,741,597, Cl. 292-1.000.
Ohsato, Nobuyoshi, to Nippon Sheet Glass Co., Ltd. Process and apparatus for the preparation of surface-modified glass ribbon. 3,741,741, Cl. 65-99.00a.
Oil Dynamics, Inc.: *See*—
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Okada, Hiroaki: *See*—
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Okamoto, Eisaku, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic rhythm instrument. 3,742,112, Cl. 84-1.030.
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Okita, Taisuke; and Yoshida, Nobuyuki, to Toaka Dyestuffs Manufacturing Co., Ltd. Rubber composition. 3,741,924, Cl. 260-27.00r.
Okuda, Nobuo; and Sekiguchi, Masahiko, to Tokyo Shibaura Electric Company. Digital servo-mechanism. 3,742,326, Cl. 318-603.000.
Okumura, Shigeo: *See*—
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Oldershaw, C. G.; and De Kramer, Don, to General Foods Corporation. Apparatus for inspecting and selecting products. 3,741,371, Cl. 198-38.000.
O'Leary, James D. Brick veneer wall construction. 3,740,911, Cl. 52-388.000.
Olin Corporation: *See*—
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Miller, John A., 3,741,121.
Oliver, John H.: *See*—
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Olson, Jack Edward; and Catalano, Guy G. Probing device for microcircuits. 3,741,022, Cl. 74-102.000.
Olsson, Frank C., to AMF Incorporated. Self-leveling dispenser. 3,741,512, Cl. 248-399.000.
Olsson, Sven Gunnar: *See*—
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Olsson, Tore Bertil Reinhold, to Aktiebolaget Bofors. Picture generating unit of the scanning type. 3,742,136, Cl. 178-6.800.
Oltman, John E.: *See*—
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Olyphant, Murray, Jr.; and Bridenbecker, Arno Don, to Minnesota Mining and Manufacturing Company. Corona-resistant electrically insulating organic polymeric compositions. 3,742,084, Cl. 260-827.000.
Omega Louis Brandt & Frere S.A.: *See*—
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Omoto, Seiichi: *See*—
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Ono, Isao; Yanagihara, Tadahisa; Koga, Toshikuni; Kato, Takao; and Okada, Hiroaki, to Toyo Soda Manufacturing Co., Ltd. Process for producing 1,4-diacetoxy-2-butene from butadiene. 3,742,039, Cl. 260-497.00a.
Ono, Nobuyuki: *See*—
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Ooka, Toshiwo; and Takata, Koji, to Sumitomo Electric Industries, Ltd. Friction pad pressing apparatus for use in disc brakes. 3,741,354, Cl. 188-345.000.
Optima-Maschinenfabrik Inhaber Dr. Max Buhler: *See*—
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Optogram, Inc.: *See*—
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Orain, Michel, to Societe Anonyme: Glaenzer Spicer. Stabilized bellows coupling for transmitting rotary movement. 3,740,968, Cl. 64-11.00b.
Orcutt, Franklin D.: *See*—
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Orenstein & Koppel Aktiengesellschaft: *See*—
Herdemann, Bernhard, 3,741,346.
Ores, Bernard; and Rauber, Claude, to Roussel-UCLAF. Extraction of bacitracin with non-ionic resins. 3,741,949, Cl. 260-112.500.
Organisation Ralfs KG: *See*—
Schneider, Erich, 3,741,369.
Orkowitz, Harry; and Sherman, Samuel M., to United States of America, Air Force, mesne. Radar apparatus with directional discrimination and increased radar sensitivity. 3,742,501, Cl. 343-7.700.
Ornstein, Leonard: *See*—
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Ortho Pharmaceutical Corporation: *See*—
Karmas, George, 3,742,028.
Orthuber, Richard Kaspar; and Alting-Mees, Hemmo Reint, to International Telephone and Telegraph Corporation. Electron tube voltage control device. 3,742,287, Cl. 315-12.000.
Osborn, Lloyd, to V-M Corporation. Clutch arrangement for tape transport. 3,741,499, Cl. 242-201.000.
Osburn, Carlton M.: *See*—
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Osdor, Astriel, to Hydro Chemical & Mineral Corporation. Process and systems for extracting salts, concentrated brine, and/or pore-water pure water saline water. 3,741,878, Cl. 202-173.000.
Osher, John E.: *See*—
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Osieka, Hans; Kiefer, Hans; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. N-alkyl-N-bi-,tri-or tetracycloalkyl thiolcarbamates. 3,742,007, Cl. 260-455.00a.
Osterlund, Dennis E.: *See*—
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Ostler, Carl Edward, to Fieldcrest Mills, Inc. Positive pile wire motion for pile fabric textile machines. 3,741,255, Cl. 139-46.000.

Ostling, Edward J., to Modular Systems, Inc. Fastener assembly. 3,741,594, Cl. 287-23.000.

Ostrager, Seymour A. Spirit vial assembly with self-aligning vial means. 3,740,858, Cl. 33-369.000.

O'Sullivan, Denis Joseph, to Loctite (Ireland) Limited. Cyanoacrylate adhesive composition. 3,742,018, Cl. 260-465.400.

Oswald, Alexis A.: *See*—
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Oswald, Alexis A.; and Lesser, Joseph H., to Esso Research and Engineering Company. Process for the preparation of S-vinylic esters of thiophosphorus acids. 3,742,098, Cl. 260-971.000.

Otsubo, Hiro; Shin, Yoichi; Kobayashi, Yoichi; and Sumiyoshi, Makoto, to Kabushiki Kaisha Oji Yuka Goseishi Kenkyujo. Synthetic paperlike film suitable for writing and printing and its preparation. 3,741,860, Cl. 161-162.000.

Ott, Hans, to Sandoz-Wander Inc. Certain 3-(β-carbethoxyethal- and 3-(β-carboxyethyl)-4-phenyl-3, 4-dihydro- and 1,2,3,4-tetrahydroquinazolines. 3,741,969, Cl. 260-251.00q.

Otte, Richard F.; and Fischer, Christopher L., to Raychem Corporation. Cryogenic connection method and means. 3,740,839, Cl. 29-628.000.

Otto, Dennis L., to Timken Company, The. Bearing seal case mounting. 3,741,615, Cl. 308-187.100.

Ouchi, Koji; Horie, Michil; and Honda, Hidemasa, to Industrial Science & Technology, Agency of. Carbon-glass composite and manufacturing method therefor. 3,742,101, Cl. 264-29.000.

Oudkerk, Benjamin Hijman, to U.S. Philips Corporation. Foot care apparatus. 3,741,201, Cl. 128-66.000.

Outboard Marine Corporation: *See*—
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Ovanesov, Jury Vagarshevich: *See*—
Sarkisov, Rafael; Stepanian, Ernst Arakelovich; Ovanesov, Jury Vagarshevich; and Maltsev, Vladimir Vasilievich, 3,741,055.

Ovchinnikov, Gennady Elizarovich: *See*—
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Owczarski, William A.: *See*—
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Owen, Ian Thornton, to Imperial Chemical Industries Limited. Trimming foam laminates. 3,741,060, Cl. 83-368.000.

Owen, Richard A.: *See*—
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Owens-Corning Fiberglas Corporation: *See*—
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Oxford Industries, Inc.: *See*—
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Oxley, Gerald K.; and Venable, Fredrick D., to TRW Inc. Variable ratio integral power steering gear. 3,741,074, Cl. 91-375.00a.

Oya, Minoru; Ito, Shin; and Kubo, Seitoku, to Toyota Jidosha Kogyo Kabushiki Kaisha. Wheel spin control system for automatic transmissions. 3,741,043, Cl. 74-866.000.

Ozaki, Toshiaki: *See*—
Fujinami, Akira; Ozaki, Toshiaki; Nodera, Katsuji; Akiba, Keiichiro; Yamamoto, Sigeo; Ianaka, Katsutoshi; and Ooishi, Tadashi, 3,741,981.

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Pabst Brewing Company: *See*—
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Pacific Technology, Inc.: *See*—
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Pacific Valves, Inc.: *See*—
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Painter, Paul C., to Freeport Brick Company. Transfer apparatus for articles with a vertical passage. 3,741,409, Cl. 214-1.0bc.

Pak-Well Corporation, mesne: *See*—
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Pale Corporation: *See*—
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Paley, Arthur Chester. Ventilating systems for sanitary systems. 3,740,772, Cl. 4-217.000.

Palitex Project-Company G.m.b.H.: *See*—
Franzen, Gustav, 3,741,026.

Palkovic, Victor; and Semple, Harry F., to Garden City Envelope Company. Sheet stock feeding mechanism. 3,741,535, Cl. 271-101.000.

Palmer, James A.; and Longcoy, Richard L., to Nu-Concept Computer Company. Digital test probe with signal latches and conditionable gating. 3,742,351, Cl. 324-72.500.

Pamn, Keh; and Stubblefield, Steven A., to Texaco Inc. Fathometer means and method. 3,742,435, Cl. 340-3.00r.

Pan-Technic, Inc.: *See*—
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Pangburn, William W.: *See*—
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Panzer, Hans Peter; and Rabinowitz, Robert, to American Cyanamid Company. Polyquaternary flocculants and processes of preparing them by quaternizing alkylene polyamine resin polymers from epihalohydrin and monoalkyl amines. 3,741,891, Cl. 210-54.000.

Papadopoulos, Michael N.; and Ueber, Russel C., to Shell Oil Company. Method of producing hydrocarbons from oil shale formations. 3,741,306, Cl. 166-252.000.

Papst, George F.; and Papst, Hans-Dieter, to Papst-Motoren KG. Fan arrangement having automatic control capability. 3,742,267, Cl. 310-67.000.

Papst, Hans-Dieter: *See*—
Papst, George F.; and Papst, Hans-Dieter, 3,742,267.

Papst-Motoren KG: *See*—
Papst, George F.; and Papst, Hans-Dieter, 3,742,267.

Parenti, Frank V.; and Staneck, Robert W., to Standard Register Company, The. Burster apparatus. 3,741,451, Cl. 225-100.000.

Parisi Associates, Inc.: *See*—
Parisi, Frank E., 3,742,353.

Parisi, Frank E., to Parisi Associates, Inc. Frequency measuring apparatus including phase-locked loop. 3,742,353, Cl. 324-79.00d.

Parker, Delmer G., to Xerox Corporation. A.C. Corona charging apparatus. 3,742,237, Cl. 250-324.000.

Parker, Joseph W., III: *See*—
Ambrose, Alwin W.; and Parker, Joseph W., III, 3,741,235.

Parker, Milton. Protector for a toothbrush or the like. 3,741,378, Cl. 206-15.10e.

Parks, John M., to Lincoln Electric Company, The. Lithium containing welding electrode. 3,742,185, Cl. 214-146.000.

Parks, Lawrence R., to Procter & Gamble Company, The. Cleaning polishing composition. 3,741,914, Cl. 252-545.000.

Parmerlee, James K.: *See*—
McKinley, David W.; and Parmerlee, James K., 3,741,353.

Parsons, Frederick L. Positive displacement rotary engine. 3,741,694, Cl. 418-61.000.

Parsons, Nicholas Tyers, to Lucas, Joseph, (Industries) Limited. Starter motors. 3,741,021, Cl. 74-7.00r.

Pashkov, Arkady Borisovich: *See*—
Kavera, Alexandr Alexandrovich; Nitkovskikh, Anatoly Anatolievich; Grigoriev, Vladimir Andreevich; Pashkov, Arkady Borisovich; and Epshtein, Yakov Vulfovich, 3,741,223.

Pass, Peter John; Carr, Douglas Wesley; Knight, Rogers Evert; Gelder, Ronald; Morrell, Moreton; Smith, Leslie William; Harris, Leonard Frederick; and Van Bastelaere, Karel Leon August, to Morgren, C. A., Limited. Fluid control and conditioning units for inertion in fluid lines. 3,741,236, Cl. 137-269.000.

Patrin, Arthur J., 25% to Florence, David W. and 25% to Patrin, Helen. Suspension and steering apparatus for vehicles. 3,741,581, Cl. 280-96.20r.

Patrin, Helen: *See*—
Patrin, Arthur J., 3,741,581.

Patriquin, George P., to Hudson Lock, Inc. Closure device for locks. 3,740,981, Cl. 70-455.000.

Patsch, Thomas E.; and Farnham, Robert E., to Barber-Greene Company. Bin level indicator. 3,742,307, Cl. 318-482.000.

Patterson, Richard J. Recordation of patient medical data. 3,740,879, Cl. 40-102.000.

Patterson, Tom W.: *See*—
Deibler, Robert R.; and Patterson, Tom W., 3,741,243.

Patton, Bobbie J.: *See*—
Foster, Manus R.; and Patton, Bobbie J., 3,742,443.

Patton, Jon R., to Clark Equipment Company. Pump controlled pressure modulator for reversing clutches. 3,741,360, Cl. 192-87.190.

Patton, Richard S.; Keyser, Naaman H.; Langdon, Vernon L.; Beaucaire, Victor D.; and Marlin, Louis A., to Interlake Steel Corporation. Drying system. 3,740,859, Cl. 34-1.000.

Pauli & Griffin Company: *See*—
Dowgin, Robert V., 3,741,738.

Pauli, Gunter: *See*—
Euer, Hartmut; and Pauli, Gunter, 3,742,352.

Paviak, Stanley, to Gulf Research & Development Company. Sulfonate detergents. 3,741,915, Cl. 252-555.000.

Pay, Brian Edward: *See*—
Newman, Edward Arthur; Pay, Brian Edward; and Manning, David Roger, 3,742,146.

Peacock, Bobbie D. Molded cushion pad insertable between heavy panels. 3,741,411, Cl. 214-10.50r.

Peacock, Roger G., to Honeywell Inc. Apparatus for controlling the discharge of a capacitor. 3,742,297, Cl. 315-239.000.

Pearce, Christopher Arthur: *See*—
Bush, Richard Paul; Lloyd, Norman Cecil; and Pearce, Christopher Arthur, 3,742,003.

Pearce, Ronald A.: *See—*
Werth, Elmer D.; Sipe, Nelson E.; and Pearce, Ronald A., 3,741,432.
Peck, C. S., Co., Inc.: *See—*
Peck, Clifford; and Garrison, Clarence A., 3,741,792.
Peck, Clifford; and Garrison, Clarence A., to Peck, C. S., Co., Inc. Method of cleaning and coating a surface with particles dispersed in a jet flame. 3,741,792, Cl. 117-46.0fc.
Peil, William, to General Electric Company. Television receiver incorporating synchronous detection. 3,742,130, Cl. 178-5.4sd.
Peltola, Ronald W.; and Guarnero, Richard F., to Tektronix, Inc. Coaxial cable connector for circuit board. 3,742,425, Cl. 339-17.00r.
Peltzer, Bernd: *See—*
Ehring, Heinz; and Peltzer, Bernd, 3,741,937.
Penasse, Lucien; Barthelemy, Pierre; and Hasbiss, Denise, to Roussel-UCLAF. Process for purifying enzymes of the asparaginase-type. 3,741,872, Cl. 195-66.00a.
Pennington, Rohe Vester, to Improved Machinery Inc. Continuous digester check valve. 3,741,864, Cl. 162-246.000.
Pennsylvania Wire Rope Corporation: *See—*
Wilke, David J.; and Kraus, James R., 3,741,033.
Pennwalt Corporation: *See—*
Arpajian, Vasken F.; and White, Quentin M., 3,741,699.
Hutchinson, Herman R.; Arpajian, Vasken F.; and Malcomson, Robert S., 3,741,700.
Jurecic, Anton, 3,741,926.
Perkin-Elmer Limited: *See—*
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Permclip Products Corporation: *See—*
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Permeator Corporation: *See—*
Veley, Carl, 3,741,308.
Perrin, Michael J.: *See—*
Smagala-Romanoff, Edward A., 3,741,665.
Perronnet, Jacques; and Demoute, Jean-Pierre, to Roussel-UCLAF. O-(N-alkyl carbamoyl)carbalkoxy-chloroformaldoxime and process for the preparation thereof. 3,742,036, Cl. 260-482.00r.
Persson, Anders: *See—*
Ling, Bernt; and Persson, Anders, 3,741,655.
Pesek, Laddie J.: *See—*
Ross, Joseph M.; Weinkamer, William A.; Pesek, Laddie J.; and Havel, John F., 3,741,271.
Peters, Thomas E., to GTE Laboratories, Incorporated. Flying spot scanner having screen of strontium thiogallte coactivated by trivalent cerium and divalent lead. 3,742,277, Cl. 313-92.0ph.
Peters, Thomas W.: *See—*
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Petersdorf, Gerhard: *See—*
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Petersen, Ross K.: *See—*
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Peterson, Fred D., to Peterson Products of San Mateo, Inc. Railroad signal battery box. 3,741,815, Cl. 136-166.000.
Peterson Products of San Mateo, Inc.: *See—*
Peterson, Fred D., 3,741,815.
Peterson, Robert S.; and Cook, John W., to Westinghouse Electric Corporation. Automatic gauge control system for tandem rolling mills. 3,740,983, Cl. 72-16.000.
Peterson, Ronald L., to Westinghouse Electric Corporation. Skimmer mechanism for a waste flotation cell. 3,741,399, Cl. 210-525.000.
Peterson, Willard D., to Occidental Petroleum Corporation. Extraction of boron from aqueous solutions with salicylic acid derivatives. 3,741,731, Cl. 23-312.00r.
Petigara, Remesh: *See—*
Yale, Harry Louis; and Petigara, Remesh, 3,741,983.
Petrella, Robert G.: *See—*
Mascioli, Rocco L.; and Petrella, Robert G., 3,741,893.
Petrone, Mario Albert: *See—*
Christensen, Richard Hans; Combs, Earl Edward; and Petrone, Mario Albert, 3,741,904.
Petros, Andrew J., to Mesta Machine Company. Strip mill entry guides. 3,740,989, Cl. 72-250.000.
Petty, Stuart Peter Fitmaurice: *See—*
Cardew, Kenneth Hugh Frederic; and Petty, Stuart Peter Fitmaurice, 3,742,407.
Peuterbaugh, Bruce G., to LaSalle Machine Tool, Inc. Machine tool system. 3,741,048, Cl. 82-2.500.
Peytavin, Pierre, to Societe Anonyme dite:-Valloures (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies). Tube rolling mill. 3,740,988, Cl. 72-238.000.
Pfaler, Carl-Eric V., to Siemens Aktiengesellschaft. Electromagnetic levitation guide. 3,741,613, Cl. 308-10.000.
Pfammatter, Theodul: *See—*
Stocker, August; Marti, Othmar; Pfammatter, Theodul; and Schreiner, Gerhart, 3,741,976.
Pfizer Inc.: *See—*
Austin, Willis R., 3,740,810.
Philadelphia College of Textiles and Science: *See—*
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Phillippi, John F.: *See—*
Gordon, Mack; and Phillippi, John F., 3,740,929.
Phillips Petroleum Company: *See—*
Dosa, Richard C., 3,742,006.
Moberly, Charles W.; and Kahle, Gerald R., 3,742,091.
Williams, Ralph P.; and Louthen, Rector P., 3,741,834.
Piaskowski, Stanislaw: *See—*
Prajsnar, Tadeusz; Rulinski, Jozef; Zglobicki, Edward; Lyzwinski, Ryszard; Lacheta, Ireneusz; Szczepanik, Aleksander; Piaskowski, Stanislaw; and Godyn, Adam, 3,740,990.
Piedmont Engineering and Machine Company, Inc.: *See—*
Christian, Donald K.; and Stafford, Ronnie L., 3,740,970.
Piedmont Machine Shop, Inc.: *See—*
Blalock, William L.; and Whitehurst, Marcus G., 3,740,796.
Pieper, Helmut, to Ingeniunbrno Glasofendau Nikolaus Sorg GmbH & Co., KG. Method and furnace for the electric melting of glass. 3,742,111, Cl. 13-6.000.
Pierce, John H.; Credle, Walter Carl; and Crawford, Lewis O., to Bouligny, R. H., Inc. Piddler mechanism feeding means. 3,741,453, Cl. 226-7.000.
Pierre, Raymond Paul, to Societe d'Etude et de Construction de Chaudiers en Acier-Seccacier. Boiler for the production of hot water. 3,741,168, Cl. 122-136.00r.
Pillsbury Company, The: *See—*
Meade, Reginald E., 3,741,273.
Pinckaers, Balthasar H., to Honeywell Inc. Power supply and phase responsive apparatus. 3,742,339, Cl. 323-119.000.
Pines, Seemon H.: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,742,042.
Pinior, Gernot: *See—*
Sick, Erwin; Pinior, Gernot; and Plockl, Johann, 3,742,225.
Pioch, Willis C. Visible line marker. 3,741,662, Cl. 356-172.000.
Pippin, Wallace H., to Rohm & Haas Company. 2-N-alkyl-amino-2-deoxy-alditonitriles and their acid congeners as biocidals. 3,742,044, Cl. 260-534.00m.
Piret, Jean, to Automobiles Peugeot and Regie Nationale des Usines Renault. Hydraulically controlled planetary gear. 3,741,037, Cl. 74-763.000.
Piret, Jean, to Automobiles Peugeot and Regie Nationale des Usines Renault. Transmission mechanism having an automatic gear change system. 3,741,038, Cl. 74-763.000.
Pirk, Hans; Ploger, Fritz; and Vietzke, Horst. Apparatus for obtaining water-free uranium compounds. 3,740,863, Cl. 34-57.00a.
Pirooz, Perry P., to Owens-Illinois, Inc. Glass-ceramic having a reflective surface and process for making same. 3,741,740, Cl. 65-32.000.
Pirre, John E. Automatic golf bag cart. 3,742,507, Cl. 343-225.000.
Pitney-Bowes, Inc.: *See—*
Mc Figgans, Robert B.; and Jones, Howell A., Jr., 3,742,456.
Pittaway, Lawrence Graham, to U.S. Philips Corporation. Ion gauges. 3,742,343, Cl. 324-33.000.
Pittman, Clarence E.; and Crim, Ivan H., to Lectra Data, Inc. Electrical counter. 3,741,472, Cl. 235-92.00c.
Plazanei, Jacques J.; and Gaillard, Christiane, to Etat Francais represente par le Ministere d'Etat de la Defense National Delegation Ministerielle pour l'Armement (Direction des Poudres). Dry granules of nitrocellulose containing a polyol and method for te preparation of such granules. 3,741,781, Cl. 106-180.000.
Pleasants, Donald Adair. Self-answering programmed instruction device. 3,740,869, Cl. 35-9.00c.
Plociennik, James L.: *See—*
Farnham, Robert E.; Prill, Fredric W.; Smith, Donald W.; and Plociennik, James L., 3,741,532.
Plockl, Johann: *See—*
Sick, Erwin; Pinior, Gernot; and Plockl, Johann, 3,742,225.
Ploeckelmann, Sidney W. Tweezers. 3,741,602, Cl. 294-99.00r.
Ploger, Fritz: *See—*
Pirk, Hans; Ploger, Fritz; and Vietzke, Horst, 3,740,863.
Plunger Lift Elevator, Inc.: *See—*
Moseley, Wallace Frederick; and Schnetzer, Robert F., 3,741,075.
Pnachal, Navnit: *See—*
McLaren, Vincent H., Jr.; and Pnachal, Navnit, 3,740,840.
Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
Raux, Raymond Henri, 3,741,144.
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Bahr, Alfred J.; and Podell, Allen F., 3,742,396.
Poelman, Prat Daniel: *See—*
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Pogonowski, Ivo C., to Texaco Inc. Subterranean clamping mechanism for submarine wells. 3,741,517, Cl. 251-5.000.
Polaroid Corporation: *See—*
Buckley, William R., 3,741,099.
LaMonaca, Philip A., 3,741,766.
Polaski, David N., to Sundstrand Corporation. Hydrostatic transmission with acceleration control. 3,740,950, Cl. 60-459.000.
Polcer, John; Barratt, Robert O.; and Musterer, Allan E., to Foster Wheeler Corporation. Sodium-heated steam generator. 3,741,167, Cl. 122-32.000.
Pollack, Bernard: *See—*
Breitling, Julius; and Pollack, Bernard, 3,741,565.
Poly-Optics, Inc.: *See—*
Hawkins, John J., 3,742,107.
Polygram Casting Co., Limited: *See—*
Fallows, John; and Worthington, John Edward, 3,741,276.
Pomerantz, Daniel Ira: *See—*
Donald, Raymond George; Spofford, Walter Richardson, Jr.; and Pomerantz, Daniel Ira, 3,742,259.

Pommerening, Uwe A., to Stromberg-Carlson Corporation. Synthesis of digital signals corresponding to selected analog signals. 3,742,197, Cl. 235-152.000.

Pontecorvo, Nicholas E., to Pontecorvo R & D Company. Preparation of Ricotta cheese. 3,741,773, Cl. 99-116.000.

Pontecorvo R & D Company: *See—*
Pontecorvo, Nicholas E., 3,741,773.

Poole, Richard R.; and Bulkley, David D., to Irtronics, Inc. Infrared temperature sensor and control for use with heated, moving bodies. 3,742,191, Cl. 219-471.000.

Porinchak, Joseph F.: *See—*
Brax, Harri J.; Porinchak, Joseph F.; and Weinberg, Alan S., 3,741,253.

Porter, Marion Gene: *See—*
Calle, Jaime; Flynn, Richard Thomas; and Porter, Marion Gene, 3,742,457.

Porter, Robert J.; and Mc Farlin, Stanley B., to Gorman-Rupp Company, The. Self-priming centrifugal pump with automatic air release valve. 3,741,675, Cl. 415-11.000.

Porter, Wilson B.: *See—*
Klein, Harold T.; and Porter, Wilson B., 3,741,318.

Portz, Wilhelm: *See—*
Krause, Johannes; and Portz, Wilhelm, 3,741,414.

Posakony, Gerald J., to Automation Industries, Inc. Ultrasonic contact scanner. 3,741,004, Cl. 73-67.80s.

Post, Richard F.: *See—*
Damm, Charles C.; Osher, John E.; and Post, Richard F., 3,742,219.

Post, Stephen F., 12 1/2% to Williams, Darrell E. and 12 1/2% to Fowler, Kenneth T. Inertial energy storage apparatus. 3,741,034, Cl. 74-572.000.

Pour-El, Akiva; and Swenson, Thomas C., to Archer Daniels Midland Company. Water-soluble protein materials. 3,741,771, Cl. 99-79.000.

Powell, B. J.: *See—*
Durrell, Charles W., Jr., 3,741,146.

Powell, Lynn L., to Burris Industries, Incorporated. Sofa bed. 3,740,774, Cl. 5-12.000.

Poylo, Michael C., to International Telephone and Telegraph Corporation. Automatic hotel security system using coded magnetic cards. 3,742,453, Cl. 340-149.00a.

PPG Industries, Inc.: *See—*
Dowbenko, Rostyslaw, 3,741,935.
Hardies, Donald E.; and Rinehart, Jay K., 3,742,010.
Seymour, Samuel L., 3,741,743.
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Prajsnar, Tadeusz; Rulinski, Jozef; Zglobicki, Edward; Lyzwinski, Ryszard; Lacheta, Ireneusz; Szczepanik, Aleksander; Piaskowski, Stanislaw; and Godyn, Adam, to Instytut Metalurgii Zelaza. Drawing die assembly with integral cooling system in die housing. 3740,990, Cl. 72-342.000.

Pravda, Milton F., to Dynatherm Corporation. Rotary heat pump. 3,740,966, Cl. 62-476.000.

Prazak, Wayne A., to Goodyear Tire & Rubber Company, The. Expanding mandrel. 3,741,571, Cl. 279-2.000.

Prem, Dorothy C.: *See—*
Duke, June T.; and Prem, Dorothy C., 3,742,092.

Premix, Inc.: *See—*
Nenadal, Clarence G., 3,741,290.

Price, Ernest James. Knob assemblies for gear-selectro levers in motor vehicles. 3,742,204, Cl. 240-7.10r.

Price, Roger Vernon, to Imperial Chemical Industries Limited. Production of impregnated rovings. 3,742,106, Cl. 264-131.000.

Prill, Erhard J., to Monsanto Company. Preparation of acid chlorides. 3,742,047, Cl. 260-544.00y.

Prill, Fredric W.: *See—*
Farnham, Robert E.; Prill, Fredric W.; Smith, Donald W.; and Plociennik, James L., 3,741,532.

Primus Mfg., Inc.: *See—*
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Prince Sangyo Kabushiki Kaisha: *See—*
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Printing Machinery Company, The: *See—*
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Privalov, Mikhail Moiseevich: *See—*
Freidenberg, Anatoly Samuilovich; Basias, Igor Pavlovich; Shakhlin, Vladimir Ilich; Trifonov, Alexei Grigorievich; Shunin, Timofei Grigorievich; Filatov, Andrei Dmitrievich; Privalov, Mikhail Moiseevich; and Ovchinnikov, Gennady Elizarovich, 3,741,083.

Privott, Wilbur J., Jr.; and Cunningham, Robert E., to Monsanto Company. Low viscosity melt spinning process. 3,742,108, Cl. 264-176.00f.

Procter & Gamble Company, The: *See—*
Parks, Lawrence R., 3,741,914.
Stuard, Charles D., 3,741,142.

Proctor, Darryl Frederic. Transducer drive circuit and signal generator. 3,742,492, Cl. 340-384.00e.

Products Chimiques Pechiney-Saint Gobain: *See—*
Vofsi, David; and Asscher, Meir, 3,742,019.

Profet, Anthony G., to Duff-Norton Company, Inc. Cable guard for ratchet lever drum puller. 3,741,528, Cl. 254-190.00r.

Protective Pads Inc.: *See—*
Truelove, John H., 3,740,762.

Publishers Paper Co.: *See—*
Forsythe, David M.; and Runckel, William J., 3,741,853.

Pugin, Andre; Burdfska, Kurt; and Model, Ernst, to Ciba-Geigy AG. Anthraquinone pigments. 3,741,995, Cl. 260-377.000.

Purcell, Jack A., Jr.; Leonard, Jerome A.; and Juratovic, John S., to Bort, Inc. Bicycle canteen. 3,741,429, Cl. 220-18.000.

Purex Corporation, Ltd.: *See—*
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Purvis, James A.: *See—*
Campbell, Thomas G.; and Purvis, James A., 3,740,815.

Pye Limited: *See—*
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Pyramid Enterprises, Inc.: *See—*
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Quaker Oats Company, The: *See—*
Burkwall, Morris P., Jr., 3,741,774.

Quenot, Andre, to Manufacture Quenot Mabo. Mitre-box. 3,741,064, Cl. 83-767.000.

Quick, Carolyn M., to Shell Oil Company. Glycidamides for inducing a hypnotic response. 3,741,191, Cl. 124-278.000.

Qurneli, Frank D.; Ikemoto, Robert N.; and Lass, James L., to General Electric Company. Fuel bundle with removable rods. 3,741,868, Cl. 176-78.000.

Rabinowitz, Robert: *See—*
Panzer, Hans Peter; and Rabinowitz, Robert, 3,741,891.

Radice, John G.: *See—*
Acker, Noel T.; and Radice, John G., 3,740,870.

Radscheit, Kurt; Stache, Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 3-β Hydroxy-14, 15β-oxido-14β-bufa-4, 20,22-trienalide-3β-(α-L-rhamnopyranoside). 3,741,955, Cl. 260-210.500.

Radscheit, Kurt; Stache, Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Cardio-active glycosides of 3 beta, 14-dihydroxy-4,5 beta-oxido-14 beta-bufa 20,22-dienolides andprocess for their preparation. 3,741,956, Cl. 260-210.500.

Raff, Lothar: *See—*
Schmidt, Peter; and Raff, Lothar, 3,741,176.

Ragsdale, Robert G., to Milgo Electronic Corporation, mesne. Automatic equalizer circuit. 3,742,360, Cl. 325-42.000.

Rahaim, Thomas J.: *See—*
Arlington, Sterling F.; and Rahaim, Thomas J., 3,741,678.

Raible, Hermann, to Bauerle, Mathias, GmbH. Control means for printing apparatus, in particular for offset printing machines. 3,742,244, Cl. 307-112.000.

Raiser, Ernst: *See—*
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Rajchman, Jan A.; and Kosonocky, Walter Frank, to RCA Corporation. Electrically and optically accessible memory. 3,742,464, Cl. 340-173.01s.

Ramanathan, Visvanathan; and Liechti, Hans Wilhelm, to Ciba-Geigy AG. Acidic desperse dyestuff preparation. 3,741,719, Cl. 8-39.000.

Rambold, Klaus: *See—*
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Ramsey Corporation: *See—*
Mayhew, Donald J., 3,741,569.

Randex, Inc.: *See—*
Urbanek, Karel; and Kerswill, Edson G., 3,741,886.

Randle, William R. Rally race computer. 3,742,195, Cl. 235-92.0ev.

Randolph, George J. J., Jr. Electromechanical deflection sensing device. 3,742,418, Cl. 338-5.000.

Ransburg Electro-Coating Corp.: *See—*
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Rathband, Walter Howard, to Butlers Limited. Bulb holders. 3,742,428, Cl. 339-75.00r.

Ratouis, Roger: *See—*
Boissier, Jacques Robert; and Ratouis, Roger, 3,742,070.

Rattenbury, Kenneth H.: *See—*
Fon Toy, Arthur Dock; and Rattenbury, Kenneth H., 3,742,040.

Rauber, Claude: *See—*
Ores, Bernard; and Rauber, Claude, 3,741,949.

Raupach, Siegfried: *See—*
Kabisch, Gerhard; and Raupach, Siegfried, 3,742,061.

Raux, Raymond Henri, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Skirts for hovercraft. 3,741,144, Cl. 114-67.00a.

Raven Industries, Inc.: *See—*
Engel, Roger K., 3,741,505.

Ravenel, Raymond, to Societe Anonyme Automobiles Citroen. Electronic control devices for multistage gear boxes. 3,741,042, Cl. 74-863.000.

Raychem Corporation: *See—*
Otte, Richard F.; and Fischer, Christopher L., 3,740,839.
Wold, Robert A.; and Higgins, Anthony P., 3,741,422.

Raytheon Company: *See—*
Andringa, Keimpe, 3,741,657.
deBettencourt, Joseph T.; and Tsao, Carson K. H., 3,742,509.
Ehrlich, Stanley L.; and Kirkland, Robert E., 3,742,440.
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Gorginsky, Herbert L., 3,742,201.

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Eaton, Sargent Sheffield, Jr., 3,742,248.

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Schwarzmann, Alfred, 3,742,392.

Redel, Ray: *See—*
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Redifon Air Trainers Limited: *See—*
Geary, Michael Edward, 3,741,638.

Reed, Robert D., to Zink, John, Company. Purge gas admission control for flare system. 3,741,713, Cl. 431-202.000.

Reed, Russell: *See—*
Hendrickson, Roger R.; Munson, William O.; Reed, Russell; and Shaw, Graham C., 3,741,585.

Reem Manufacturing Company: *See—*
Evans, Llewellyn W., 3,740,824.

Rees, Clive, to Girling Limited. Coupling for moulded tubular components. 3,741,251, Cl. 138-96.000.

Rees, Herbert: *See—*
Van Melle, Hugh; and Rees, Herbert, 3,741,366.

Reflex Corporation of Canada Limited: *See—*
Mihalik, Michael J., 3,741,623.

Refrigerating Specialties Co.: *See—*
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Regie Nationale des Usines Renault: *See—*
Andreux, Bernard, 3,741,172.
Bouthors, Pierre; and Lefeuvre, Andre, 3,741,024.
Magnier, Roger, 3,741,358.
Piret, Jean, 3,741,037.
Piret, Jean, 3,741,038.

Regitz, William M., to Honeywell Inc. Electronic memory storage element. 3,742,465, Cl. 340-173.0ca.

Reichhold-Albert-Chemie Aktiengesellschaft: *See—*
Dalibor, Horst, 3,741,798.

Reichler, Allen S.: *See—*
Caruso, Stephen; Isenberg, Henry D.; Reichler, Allen S.; and Wiseman, Donald F., 3,742,194.

Reick, Kenneth R.; and Wolff, David F., to Sunbeam Business Equipment Co. Hand-fed electrophotographic copier. 3,741,642, Cl. 355-8.000.

Reidenbach, Robert B., to Gindy Manufacturing Corporation. Roof bow apparatus. 3,741,561, Cl. 269-43.000.

Reinermann, Karl-Heinz: *See—*
Sistig, Eberhard; and Reinermann, Karl-Heinz, 3,741,728.

Reiser, Alfred A. Unbalance detector. 3,741,017, Cl. 73-480.000.

Reliance Electric Company: *See—*
Lauer, Robert J., 3,742,445.

Remensnikov, Alexandr Ilich; Vasiliev, Viktor Mikhailovich; and Ashotovich, Robert. Device for cutting out round holes in cylindrical and oval parts and structures. 3,741,556, Cl. 266-23.00n.

Remington Arms Company, Inc.: *See—*
Kordas, Martin W., Jr., 3,741,122.

Rendek, Robert B.: *See—*
Wrobel, Raymond J.; and Rendek, Robert B., 3,741,777.

Republic Industries, Inc.: *See—*
Leyde, Warren L.; and Marker, Delbert E., 3,742,434.

Rethmeier, Gerhard: *See—*
Kleffman, Gunter; and Rethmeier, Gerhard, 3,742,193.

Reuter, Conrad N.: *See—*
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Revillet, Georges: *See—*
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Rexham Corporation, mesne: *See—*
Young, Chauncey; and Watson, William H., 3,741,463.

Reynolds, Anthony Desmond, to Lilly Industries Limited. Apparatus for making spherical granules. 3,741,703, Cl. 425-222.000.

Reynolds, John H.: *See—*
Weeks, Lloyd E.; and Reynolds, John H., 3,741,871.

Reynolds, Maurice Alfred; and Elkington, Ronald William, to Alcan Research and Development Limited. Age hardening process and product. 3,741,827, Cl. 148-159.000.

Reynolds Metals Company: *See—*
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Rezelman, James Alan: *See—*
Bidlack, Richard Henry; McKelvey, William John; and Rezelman, James Alan, 3,742,154.

Reznik, David, to United States of America, Agriculture. System for hydrating dates. 3,741,106, Cl. 99-485.000.

Rheem Manufacturing Company: *See—*
Gerlovich, Albert F., 3,741,149.

Rheinstahl Ag: *See—*
Schneider, Felix; Oerter, Manfred; and Walser, Rudolf, 3,741,027.

Rhoades, Vaughan W., to Cities Service Oil Company. Cable sealing apparatus. 3,741,568, Cl. 277-34.600.

Rhone-Poulenc S.A.: *See—*
Boesch, Roger, 3,741,977.
Bourat, Guy; and Margraff, Rodolphe, 3,741,945.

Rice, Edward K. Variable pitch form. 3,741,515, Cl. 249-26.000.

Richards, Albert G. Method and apparatus for variable depth laminagraphy. 3,742,236, Cl. 250-321.000.

Richardson, Hugh H., to General Electric Company. Method and apparatus for quantitatively evaluating integrity of winding insulation. 3,742,349, Cl. 324-54.000.

Richmond, Jon C.: *See—*
Carr, Theodore G.; Richmond, Jon C.; Dueker, James E.; and Wagner, Robert G., 3,742,223.

Richmond, Thomas C., to U.S. Philips Corporation. Bellows sealed shutoff valve. 3,741,520, Cl. 251-144.000.

Richter, Hans Heinrich, to Leesona Corporation. Apparatus for winding yarn. 3,741,491, Cl. 242-18.100.

Richter, S. B.: *See—*
Krenzer, John; and Richter, S. B., 3,742,008.

Rickey, Roger E., to Ford Motor Company. Carburetor idle system air bleed. 3,741,188, Cl. 123-198.0db.

Riddiford, Frank Oliver George. Devices for automatically controlling the watering of plants. 3,741,239, Cl. 137-408.000.

Riehl, Roger W.: *See—*
Boshinski, Edwin E.; Clark, Walter W.; Riehl, Roger W.; and Watson, William M., 3,741,324.

Rieter Machine Works, Ltd.: *See—*
Wuest, Olivier, 3,741,488.

Riley, Travis E., to Mark Products, Inc. Seismometer. 3,742,441, Cl. 340-17.000.

Rimanek, Gunther: *See—*
Stube, Richard; and Rimanek, Gunther, 3,741,325.

Rinehart, Jay K.: *See—*
Hardies, Donald E.; and Rinehart, Jay K., 3,742,010.

Risany, Joseph J.: *See—*
Urbutis, Algimantas P.; Schenk, Bernard H.; Risany, Joseph J.; and Marbach, Walter V., 3,741,779.

Risher, Frederick L., to Morris, Philip, Incorporated. Safety razor embodying blade pressure control. 3,740,841, Cl. 30-32.000.

Rising, Donald B.: *See—*
Shaufus, Charles P.; Rose, Robert E.; and Rising, Donald B., 3,741,877.

Rist, Bruno A.: *See—*
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Robbins Company: *See—*
Klein, Harold T.; and Porter, Wilson B., 3,741,318.

Roberts, George C.; and Datson, Donald A., to Monogram Industries, Inc. Waste incineration system. 3,741,134, Cl. 110-8.00r.

Roberts, Webster C.; and Foster, Alan M., to Harris-Intertype Corporation. Apparatus and method for generating halftones for image reproduction. 3,742,129, Cl. 178-5.4cd.

Robertson, H. H., Company: *See—*
Singleton, Fred G., 3,740,822.

Robertson, William Swan, to Simon-Hartley Limited. Aerators. 3,741,682, Cl. 416-179.000.

Robinson, Alfred G., III: *See—*
Hagemeyer, Hugh J., Jr.; and Robinson, Alfred G., III, 3,742,063.

Robinson, Joel P.: *See—*
Maly George P.; and Robinson, Joel P., 3,741,301.

Robinson, Ralph O., Jr., to United States of America, Navy. Process for making a toroidal inductance coil. 3,740,837, Cl. 29-602.000.

Rocke, Arthur F. Lyle, to International Telephone and Telegraph Corporation. Identification of elevation angle of arrival of multiple ionospheric reflections. 3,742,505, Cl. 343-113.00r.

Rockwell Manufacturing Company: *See—*
Drouin, Andre H., 3,741,297.
Herd, David P.; Mc Caskill, John W.; and Bonds, James V., 3,741,589.

Rockwell, Perry M.: *See—*
Harbaugh, Samuel S.; and Rockwell, Perry M., 3,741,557.

Roesel, Vernon H. Control apparatus and method for metal working tools. 3,741,555, Cl. 266-23.00m.

Rogeness, Gaylord G., to Anaconda Wire and Cable Company. Frequency interference reduction in cable television systems. 3,742,131, Cl. 178-5.600.

Rohm & Haas Company: *See—*
McLaughlin, Thomas A.; Swithenbank, Colin; and Yih, Roy Y., 3,742,051.
Pippin, Wallace H., 3,742,044.

Rohrer, David A.: *See—*
Deushane, Maurice L.; and Rohrer, David A., 3,741,884.

Romell, Gunnar Vigg Riss; and Eklof, Ake Torsten. Hydraulic fluid actuated percussion tool. 3,741,072, Cl. 91-290.000.

Roosen, Raymond Albert: *See—*
Van Paesschen, August Jean; Timmerman, Daniel Maurice; Van Hoof, Albert Emiel; Roosen, Raymond Albert; and Verbrugghe, Roland Gaston, 3,741,768.

Rorer, William H., Inc.: *See—*
Diamond, Julius; and Auyang, King, 3,742,064.

Rose, Robert E.: *See—*
Shaufus, Charles P.; Rose, Robert E.; and Rising, Donald B., 3,741,877.

Rosenberry, George M., Jr.: *See—*
Baumann, Frederick W.; Smith, William R.; MacNary, Robert G.; Miller, Albert R.; Pangburn, William W.; Rosenberry, George M., Jr.; and Kaczkowski, Bernard C., 3,741,278.

Rosenthal, Jerome A., to Xerox Corporation. Character generating apparatus employing bit steam length correction. 3,742,484, Cl. 340-324.00a.

Ross, Frederick W. Oscillatory motion coupler. 3,741,559, Cl. 267-124.000.

Ross, Ivan L., to American Chain & Cable Company, Inc. Suspended conveyor system. 3,741,126, Cl. 104-96.000.

Ross, Joseph M.; Weinkamer, William A.; Pesek, Laddie J.; and Havel, John F., to Gould Inc., mesne. Tire bead sealing and seating device. 3,741,271, Cl. 157-1.100.

Roth, Milton. Nitration of toluene and nitrotoluenes to form TNT. 3,742,072, Cl. 260-645.000.

Rouger, Henri Andre, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Variable compression ratio internal combustion engines. 3,741,175, Cl. 123-48.00a.

Roulund, Poul B.: *See—*
Leavitt, Minard A.; and Roulund, Poul B., 3,741,650.

Roussel-UCLAF: *See—*
Allais, Andre; Meier, Jean; and Dube, Jacques, 3,741,988.
Ores, Bernard; and Rauber, Claude, 3,741,949.
Penasse, Lucien; Barthelemy, Pierre; and Hasbiss, Denise, 3,741,872.
Perronnet, Jacques; and Demoute, Jean-Pierre, 3,742,036.

Routson, Willis G.; and Neale, Michael, to Dow Chemical Company, The. Composition and method for improving fluids for secondary oil recovery. 3,741,895, Cl. 252-8.55d.

Rowe International Inc.: *See—*
Kull, Leo; and Landis, Bruce B., 3,741,620.

Rowen, James H., to Nabisco, Inc. Package with self-contained handle for storing and heating food, and method of forming same. 3,741,778, Cl. 99-171.00h.

Roy, Milton, Company, mesne: *See—*
Yeiser, John O., 3,742,515.

Rozema, Arthur L.; Osburn, Carlton M.; and Vanbenthuysen, John D., to CTS Corporation. High voltage resistor. 3,742,422, Cl. 338-257.000.

Rubenstein, Morris B. Combined fishing lure. 3,740,891, Cl. 43-42.020.

Rubin, Isaac D.: *See—*
Holder, Charles B.; Rubin, Isaac D.; and Cusano, Carmen M., 3,742,088.

Rubin, James M. Wire cutting pliers. 3,740,844, Cl. 30-124.000.

Rubin, James M. Orthodontic bracket. 3,740,849, Cl. 32-14.00a.

Rubinchik, Galina Markovna: *See—*
Solokhin, Boris Ivanovich; and Rubinchik, Galina Markovna, 3,740,876.

Ruble, Frank D.: *See—*
Ha, In W.; Hollstein, Carl P., Jr.; and Ruble, Frank D., 3,742,470.

Rubricuis, Jeannette L., to LeVeen, Harry H. Surgical device. 3,740,779, Cl. 7-14.10r.

Rudd, Alexander H.; Hansen, Walter A.; and Ingersoll, James E., to Babcock & Wilcox Company, The. Tube supports. 3,741,174, Cl. 122-510.000.

Rude, Steven L. Sled. 3,741,577, Cl. 280-18.000.

Ruether, Peter Gade, to Bell Telephone Laboratories, Incorporated. Communication call holding and supervising circuit. 3,742,151, Cl. 179-99.000.

Rugger, Warren E. Concrete form securing means. 3,741,516, Cl. 249-216.000.

Rulinski, Jozef: *See—*
Prajsnar, Tadeusz; Rulinski, Jozef; Zglobicki, Edward; Lyzwinski, Ryszard; Lacheta, Ireneusz; Szczepanik, Aleksander; Piaskowski, Stanislaw; and Godyn, Adam, 3,740,990.

Runckel, William J.: *See—*
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Rupp, Warren, Company, The: *See—*
Rupp, Warren E., 3,741,689.
Rupp, Warren E., 3,741,692.

Rupp, Warren E., to Rupp, Warren, Company, The. Air operated diaphragm pump. 3,741,689, Cl. 417-393.000.

Rupp, Warren E., to Rupp, Warren, Company, The. Surge suppressor for fluid lines. 3,741,692, Cl. 417-540.000.

Russell, Michael Frederick, to C.A.V. Limited. Pulleys. 3,741,025, Cl. 74-230.400.

Russell, Ronald W.: *See—*
Frederiksen, Thomas M.; and Russell, Ronald W., 3,742,256.

Russell, Sidney Major. Suspension units for files. 3,741,402, Cl. 211-104.000.

Rust Engineering Company, The: *See—*
Brooks, S. Hunter W., 3,741,863.

Ryan, Trevor B., to Jury & Spiers Proprietary Limited. Method of making expanded metal products. 3,740,812, Cl. 29-155.00c.

S.A. Francois Salomon & Fils: *See—*
Salomon, Georges Pierre Joseph, 3,741,576.

Sackman, George L., to United States of America, Navy. Ultrasonic camera tube. 3,742,284, Cl. 315-11.000.

Safarov, Georgy Samuilovich: *See—*
Kozheurov, Vsevolod Rodionovich; Berezin, Leonid Georgievich; Safarov, Georgy Samuilovich; and Bulgakov, Petr Lavrentievich, 3,741,280.

Sagami Chemical Research Center: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, 3,742,066.

Sakakibara, Naoji; Kawabata, Yasuhiro; and Tsukuba, Korehiko, to Aisin Seiki Kabushiki Kaisha. Safety device for motor-vehicle engine-speed governor. 3,741,332, Cl. 180-108.000.

Saladin, Lawrence J., to Accurate Manufacturing Co. Punch device. 3,741,056, Cl. 83-140.000.

Saleh, Adel Abdel Moneim, to Bell Telephone Laboratories, Incorporated. Polarization-insensitive millimeter-wave directional coupler. 3,741,625, Cl. 350-147.000.

Salensky, George A., to Union Carbide Corporation. Epoxide molding compositions containing meta-tolylene diamine and a silicious filler. 3,741,928, Cl. 260-37.0ep.

Salkeld, Robert J. Self monitoring strike system. 3,741,501, Cl. 244-3.140.

Salomon, Georges Pierre Joseph, to S.A. Francois Salomon & Fils. Ski bindings. 3,741,576, Cl. 280-11.35h.

Samsonite Corporation: *See—*
Workman, David E., 3,741,130.

Samuels, W. Edward. Self-powered feedback-controlled volatile liquid dispensing apparatus. 3,741,230, Cl. 137-804.000.

San Saba Development Association: *See—*
Ellis, Sloan E., 3,741,195.

Sandall Precision Company Limited: *See—*
Browne, John Patrick, 3,741,237.

Sanden, Gerald: *See—*
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Sanders Associates, Inc.: *See—*
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Sanders, Robert G.: *See—*
Guilbault, George G.; Sanders, Robert G.; and Zimmerman, Robert L., 3,741,876.

Sanders, William I., Jr., to DeMet Engineering Company. Modular blending system. 3,741,440, Cl. 222-132.000.

Sandiford, Burton B.; and Knight, Robert K., to Union Oil Company of California. Oil recovery method. 3,741,307, Cl. 166-273.000.

Sandner, Winfried: *See—*
Knechtel, Wilhelm; Petersdorf, Gerhard; and Sandner, Winfried, 3,741,646.

Sandoz Ltd.: *See—*
Altermatt, Ruedi, 3,741,954.
Henrard, Armand; Kehrer, Fritz; and Wasem, Hans, 3,741,953.

Sandoz-Wander, Inc.: *See—*
Griot, Rudolf G., 3,741,974.
Houlihan, William J.; and Nadelson, Jeffrey, 3,741,980.
Ott, Hans, 3,741,969.

Sangou, Isao; and Konishi, Tatsuo, to Nippon Electric Company, Limited. Drum servo system of a video tape recorder for an electronic editing. 3,742,132, Cl. 178-6.60p.

Santen Pharmaceutical Co., Ltd.: *See—*
Toshioka, Nobuo; Okumura, Shigeo; and Mita, Itaru, 3,741,975.

Santis, Dean C.; Wavre, Andre; and Szabo, Andras I., to Westinghouse Electric Corporation. Magnetic position indicator. 3,742,409, Cl. 336-45.000.

Sanz, Manuel C.; and Revillet, Georges, to Micromedic Systems, Inc. Percussion apparatus for blood sampling. 3,741,197, Cl. 128-2.00f.

Sargent and Company: *See—*
Ohno, Richard J., 3,741,597.

Sargent, Charles L., to Thermasan Corporation. Method and apparatus for disposing of human waste in a vehicle. 3,740,773, Cl. 4-114.000.

Saridis, Harry. Semi automated retail store. 3,741,345, Cl. 186-1.00r.

Sarkisov, Rafael; Stepanian, Ernst Arakelovich; Ovanesov, Jury Vagarshevich; and Maltsev, Vladimir Vasilievich. Automatic transfer press with vertical stamping surfaces for stamping concentric parts of sheet material. 3,741,055, Cl. 83-132.000.

Sasaki, Kenji, to Mitsui Mining & Smelting Co., Ltd. Electric conductor for use in metallic salt electrolytic cell. 3,741,885, Cl. 204-288.000.

Sato, Kazuo; Hisatsune, Tomio; and Watanabe, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Safety device for vehicle passengers. 3,742,497, Cl. 343-7.0ed.

Sato, Masamichi: *See—*
Matsumoto, Seiji; Honjo, Satoru; Sato, Masamichi; and Fukushima, Osamu, 3,741,644.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyujo. Hand labeler. 3,741,847, Cl. 156-384.000.

Saubestre, Edward B.; and Durney, Lawrence J., to Enthone Incorporated. Preparation of through hole printed circuit boards, and compositions useful therefor. 3,741,905, Cl. 252-142.000.

Sauer, Gale E.; and Mapes, Carl R., to National Gypsum Company. Fire retardant shaft wall. 3,740,912, Cl. 52-479.000.

Sauer, Wolfgang: *See—*
Keller, Hans; and Sauer, Wolfgang, 3,742,385.

Saunders, Richard J., to Cohernet Radiation. Method for scanning mask forming holer with a laser beam. 3,742,182, Cl. 219-121.01m.

Savage, Albert B.: *See—*
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Savin Business Machines Corporation: *See—*
Smith, Ian Edward; Hastwell, Peter John; and Vermeulen, Marinus Corneius, 3,741,643.

Savio, Lino P.: *See—*
Henschke, Ernest J.; Logemann, George H.; Moorad, Stanley; and Savio, Lino P., 3,741,410.

Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, to Upjohn Company, The. Method for bonding a polyurethane coating to an organic polymeric substrate. 3,741,794, Cl. 117-93.310.

Sayles, David C., to United States of America, Army. Gas generator compositions containing a substituted glyoxime. 3,741,828, Cl. 149-19.000.

Scanlon, Patricia M.: *See—*
Ohlson, John L.; Scanlon, Patricia M.; and Gaudette, Roger R., 3,742,002.

Scanlon, Patricia M.; and Young, Elwyn R., to Grace, W. R., & Co. Imidoethei and amidine derivatives of substituted fatty amides. 3,742,000, Cl. 260-404.500.

Scaramucci, Domer; and Adams, Ladd M., to Balon Corporation. Seat for ball valve. 3,741,523, Cl. 251-315.000.

Schaefer, Carl A., to Square D Company. Pressure switch. 3,742,166, Cl. 200-83.0sa.

Schaer, Glenn R., to United States of America, Army. Method of electrodepositing a lusterless, electrically conductive coating. 3,741,882, Cl. 204e42.000.
Schaller, Albert L., to General Motors Corporation. Dampened shock absorbing bumper. 3,741,560, Cl. 267-134.000.
Schanzer, Oswald: *See—*
Gansheimer, Josef; and Schanzer, Oswald, 3,741,897.
Schenek, Leslie M.: *See—*
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Schenk, Bernard H.: *See—*
Urbutis, Algimantas P.; Schenk, Bernard H.; Risany, Jo[illegible]h J.; and Marbach, Walter V., 3,741,779.
Schering, AG: *See—*
Berndt, Hans-Detlef; and Wiechert, Rudolf, 3,741,997.
Schick, Gunter. Measuring transducer with combined power input and signal output lines. 3,742,342, Cl. 323-4.000.
Schimizzi, Ernest Joseph: *See—*
Schimizzi, Gregory Frank; and Schimizzi, Ernest Joseph, 3,740,980.
Schimizzi, Gregory Frank; and Schimizzi, Ernest Joseph. Automobile trunk lock mechanism (anti-theft device). 3,740,980, Cl. 70-417.000.
Schlumberger Technology Corporation: *See—*
McGill, Howard L., 3,741,304.
Young, David E.; Kisling, James W., III; and Nutter, Benjamin P., 3,741,305.
Schmid, Emmerich, to Sulzer Brothers Ltd. Apparatus for adsorbing carbon dioxide from air in a storage system. 3,740,928, Cl. 55-179.000.
Schmid, Leopold F. Ball joint, especially for steering devices and wheel suspensions of motor vehicles. 3,740,986, Cl. 72-84.000.
Schmidt, Gunter, to Du Pont de Nemours, E. I., and Company. X-ray film package. 3,741,386, Cl. 206-62.00r.
Schmidt, John E., to Square D Company. Tap-off section for a feeder bus duct run. 3,742,121, Cl. 174-72.00b.
Schmidt, Peter; and Raff, Lothar, to Bosch, Robert, G.m.b.H. Pulse generator for controlling the valves of an internal combustion engine. 3,741,176, Cl. 123-90.120.
Schmuck, Peter: *See—*
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Schneebeli, Willi: *See—*
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Schneider, Emery J.; and Burman, Bruce G., to Teledyne, Inc. Solid state vacuum tube replacement. 3,742,261, Cl. 307-304.000.
Schneider, Erich, to Organisation Ralfs KG. Conveyor address system. 3,741,369, Cl. 198-38.000.
Schneider, Felix; Oerter, Manfred; and Walser, Rudolf, to Rheinstahl Ag. Driving transmission for opening and closing sliding roof parts. 3,741,027, Cl. 74-337.000.
Schneider, George: *See—*
Hamilton, Andrew Joseph; and Schneider, George, 3,741,747.
Schneider, Otto. Precision spiral steel staircase. 3,740,906, Cl. 52-187.000.
Schnetzer, Robert F.: *See—*
Moseley, Wallace Frederick; and Schnetzer, Robert F., 3,741,075.
Schnoes, Heinrich K.: *See—*
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Schrecker, Howard D.: *See—*
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Schreiner, Gerhart: *See—*
Stocker, August; Marti, Othmar; Pfammatter, Theodul; and Schreiner, Gerhart, 3,741,976.
Schroader, Irvin H.; Hosea, Melvin E.; Caggiano, Vincent J.; and Miller, Leo C., to United States of America, Navy. Long range missile programmer. 3,741,502, Cl. 244-3.130.
Schroeter, Siegfried H., to General Electric Company. Curable compositions of maleimido substituted aromatic material. 3,742,089, Cl. 260-873.000.
Schroll, Josef; and Sroke, Werner, to VEB Ingenieurburo Schiffbau. Apparatus for centrifugal casting. 3,741,283, Cl. 164-287.000.
Schrott, Erwin; Bier, Gerhard; and Gumboldt, Albert Gustav Martin, to Hercules Incorporated, mesne. Polymerization and copolymerization of aryl-substituted olefins containing halogen in the nucleus. 3,741,947, Cl. 260-91.500.
Schuder, Maurice E.: *See—*
Murray, Stephen F.; and Schuder, Maurice E., 3,742,160.
Schuessler, Richard D. Knitted headwear with wind barrier. 3,740,767, Cl. 2-173.000.
Schultz, Thomas C., to Ford Motor Company. Carburetor throttle valve positioner. 3,741,177, Cl. 123-97.00b.
Schulz, Gordon, to Odetics, Inc. Tri-capstan tape transport. 3,741,564, Cl. 274-4.00d.
Schulz, Johann G. D.: *See—*
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Schulze, Heinz: *See—*
Kmiecik, James Edward; and Schulze, Heinz, 3,741,961.
Schulze, Kurt-Jurgen; and Jung, Joachim, to Glanzstoff AG. Apparatus for immersing steel wires in molten lead both including floating particulate-stripper means. 3,741,151, Cl. 118-123.000.
Schwartz, A. William, to Tenneco Chemicals Inc. Hot melt process for forming resin layer on polyurethane foam. 3,741,844, Cl. 156-244.000.
Schwarzmann, Alfred, to RCA Corporation. Selfloaded uneven power divider. 3,742,392, Cl. 333-9.000.
Schwerdtfeger, Wilbur E., to International Harvester Company. Single lever control. 3,741,031, Cl. 74-471.0xy.
Schwesig, Helmut: *See—*
Nordsiek, Karl-Heinz; Sommer, Neithart; and Schwesig, Helmut, 3,741,927.
Schwieter, Ulrich: *See—*
Gutmann, Hugo; and Schwieter, Ulrich, 3,742,038.
Schwing, Friedrich Wilhelm. Hydraulic piston pump assembly. 3,741,691, Cl. 417-517.000.
Sciaky, David, to Welding Research, Inc. Electron beam welder incorporating sliding seal means. 3,742,365, Cl. 219-121.0eb.
SCM Corporation: *See—*
Bordenca, Carl, 3,742,052.
Markakis, Michael J., 3,741,086.
Scott, Blayney J. Fishing lure. 3,740,889, Cl. 43-42.090.
Scott Paper Company: *See—*
Endres, Dan D., 3,741,212.
Scovill Manufacturing Company: *See—*
Thacker, Stephen Ernest William, 3,741,267.
Scraper, Robert D., to Mid-America Testing Service, Inc. Apparatus for weighing samples. 3,741,326, Cl. 177-59.000.
Seaboard Systems, Inc.: *See—*
Sullivan, Joseph L. O., 3,742,133.
Sears, Edgar A., Jr.; and Taylor, Harry M., to Hydril Company. Retention of pressure line to well tubing. 3,740,801, Cl. 24-81.0cc.
Sears, James H.; and Jones, Bernard H., to Owens-Corning Fiberglas Corporation. Apparatus for treatment of linear elements. 3,741,153, Cl. 118-405.000.
Seastrom Manufacturing Co., Inc.: *See—*
Seastrom, Wesley D., 3,741,450.
Seastrom, Wesley D., to Seastrom Manufacturing Co., Inc. Compartment organizer. 3,741,450, Cl. 224-42.42r.
Security Technology Corporation: *See—*
Crepinsek, Alois, 3,740,979.
Seibt, Arthur H.; and Churchill, Frank T., to Tektronix, Inc. Wide range regulated power supply utilizing optimized energy storage. 3,742,371, Cl. 321-2.000.
Seiko Seiki Kabushiki Kaisha: *See—*
Nemoto, Kenji; and Ozawa, Fumihiro, 3,741,572.
Seki, Takashi; Toki, Katsuyuki; Nakatani, Hiroshi; Suzuki, Yoshio; Fukushima, Hideaki; and Nawashiro, Yoshio, to Sumitomo Chemical Co., Ltd. N-substituted amides of natural fatty acids. 3,741,999, Cl. 260-404.000.
Sekiguchi, Masahiko: *See—*
Okuda, Nobuo; and Sekiguchi, Masahiko, 3,742,326.
Sekmakas, Kazys, to DeSoto, Inc. Production of maleic acid copolymers and hydroxy derivatives thereof. 3,741,943, Cl. 260-78.50t.
Seldin, Ira L.: *See—*
Ciccarelli, Roger N.; Seldin, Ira L.; and Belli, Frank G., 3,741,759.
Sellers, John: *See—*
Wood, William; Griffiths, Mary; and Sellers, John, 3,741,259.
Selwitz, Charles M.: *See—*
Bacha, John D.; and Selwitz, Charles M., 3,742,073.
Semmler, Erich: *See—*
Deluca, Hector F.; Schnoes, Heinrich K.; Holick, Michael F.; and Semmler, Erich, 3,741,996.
Semple, Harry F.: *See—*
Palkovic, Victor; and Semple, Harry F., 3,741,535.
Sentralinstitutt for Industrielle Forskning: *See—*
Kjelland-Fosterud, Einar, 3,742,110.
Servillat, Gabriel, to Verdol S.A. Preparation of perforated jacouard cards or papers. 3,741,468, Cl. 234-65.000.
SESCOSEM- Societe Europienne de Semiconducteurs et de Microelectronique: *See—*
Boudry, Jean-Marie, 3,742,260.
Sessions, Robert W. Grounding plate or electrode for electromedical equipment. 3,741,219, Cl. 128-417.000.
Sethares, James C.: *See—*
Stiglitz, Martin R.; and Sethares, James C., 3,742,390.
Seybold, Rolf, to Evertz, Egon. Method and apparatus for measuring the internal volume of moulds and similar cavity members. 3,741,011, Cl. 73-149.000.
Seymour, Samuel L., to PPG Industries, Inc. Glass sheet shaping frame. 3,741,743, Cl. 65-287.000.
SFK Kugellagerfabriken GmbH: *See—*
Brichta, Franz; and Driesel, Franz, 3,740,798.
Shah, Rajendra P., to Vendo Company, The. Alternating feed for coins or the like. 3,741,362, Cl. 194-1.00f.
Shakespear Company: *See—*
Howald, Arthur M., 3,741,784.
Shakhlin, Vladimir Ilich: *See—*
Freidenberg, Anatoly Samuilovich; Basias, Igor Pavlovich; Shakhlin, Vladimir Ilich; Trifonov, Alexei Grigorievich; Shunin, Timofei Grigorievich; Filatov, Andrei Dmitrievich; Privalov, Mikhail Moiseevich; and Ovchinnikov, Gennady Elizarovich, 3,741,083.
Shane, Hugh J. S., to Hart Chemical Limited. Phosphate-free detergent composition. 3,741,911, Cl. 252-527.000.

Shao, Tzu Fann, to Texas Instruments, Incorporated. Schottky barrier diode. 3,742,317, Cl. 317-235.00r.
Shapiro, William A., to Bendix Corporation, The. Fill lever measuring device. 3,741,656, Cl. 356-103.000.
Sharpe, John E., to Wilkinson Sword Limited. Clinical blood pressure measuring apparatus. 3,741,199, Cl. 128-2.05m.
Shattuck, Donald P.; and Harnden, John D., Jr., to General Electric Company. Spark-suppressing brush-brush holder assembly for rotating machines and sliding contacts. 3,742,272, Cl. 310-220.000.
Shaufus, Charles P.; Rose, Robert E.; and Rising, Donald B., to Millipore Corporation. Method and apparatus for collecting and growing micro-organisms. 3,741,877, Cl. 195-127.000.
Shaw, Graham C.: *See*—
Hendrickson, Roger R.; Munson, William O.; Reed, Russell; and Shaw, Graham C., 3,741,585.
Shaw, Noel S. Hydrostatic-mechanical transmission. 3,741,040, Cl. 74-794.000.
Shaw, Robert L.: *See*—
Boyer, Charles B.; Orcutt, Franklin D.; Shaw, Robert L.; and Gregg, Galen C., 3,741,718.
Shealy, Noah A.: *See*—
Lindenfeld, John A.; Hartz, Cledith L.; and Shealy, Noah A., 3,741,343.
Sheeran, Patrick J., to Du Pont de Nemours, E. I., and Company. N-sulfamoyl-2-thiopenecarboxamides. 3,741,984, Cl. 260-332.20c.
Sheinhartz, Irving; Finlay, Walter L.; and Hay, Donald A., to Copper Range Company. Decorative textured metallic surfaces. 3,741,788, Cl. 117-9.000.
Shell Oil Company: *See*—
Papadopoulos, Michael N.; and Ueber, Russel C., 3,741,306.
Quick, Carolyn M., 3,741,191.
Sheppard, Albert S., to Exitaire Co., The. Gravity operated ventilator unit. 3,741,101, Cl. 98-86.000.
Sheridan, John F.: *See*—
Bean, Frank J.; and Sheridan, John F., 3,740,855.
Sheridan, Nicholas K., to Xerox Corporation. Imaging system. 3,742,439, Cl. 340-5.00h.
Sherman, Leigh E.; Adams, Walter P.; and Crawford, Lynn D., to Mobility Systems, Inc. Inductively coupled data communication apparatus. 3,742,150, Cl. 179-82.000.
Sherman, Samuel M.: *See*—
Orkowitz, Harry; and Sherman, Samuel M., 3,742,501.
Sherritt Gordon Mines Limited: *See*—
Evans, David John Ivor; Veltman, Herbert; and O'Kane, Patrick T., 3,741,752.
Fustukian, David A. W.; Norris, Leon F.; Fraser, Robert W.; and Evans, David John Ivor, 3,741,748.
Shiba, Hiroshi; and Tsunemitsu, Hideo, to Nippon Electric Company, Limited. Method of forming electrical connections in a semiconductor integrated circuit. 3,741,880, Cl. 204-15.000.
Shim, Kyung S., to Stauffer Chemical Company. Polymeric tertiary alkylamine vulcanizing agents and method of preparation. 3,742,058, Cl. 260-583.0ee.
Shimamura, Isao: *See*—
Iwano, Haruhiko; Shimamura, Isao; Ohi, Reiichi; and Shishid, Tadao, 3,741,765.
Shimizu, Shinkichi: *See*—
Shiraishi, Tatsuo; Kishiwada, Susumu; Shimizu, Shinkichi; Honmaru, Shigery; Toshira, Hiroshi; and Naogaoka, Yohishi, 3,741,910.
Shimizu, Yasuhiro. Nether limbs training implement. 3,741,540, Cl. 272-83.00r.
Shin, Yoichi: *See*—
Otsubo, Hiro; Shin, Yoichi; Kobayashi, Yoichi; and Sumiyoshi, Makoto, 3,741,860.
Shindelman, Jury Iosifovich; Akulova, Galina Iosifovna; Snitka, Galina Grigorievna; Vasyagin, Nikolai Ivanovich; and Tyabirdin, Vladimir Vasilievich. Low-pressure mercury-vapour gas-discharge lamp with amalgam. 3,742,278, Cl. 313-109.000.
Shinoda, Masaichi; and Igarashi, Masaru, to Fujitsu Limited. Method of manufacturing variable capacitance diodes. 3,741,826, Cl. 148-178.000.
Shinoda, Yoshie, to Tomy Kogyo Co., Ltd. Pneumatically operated walking doll. 3,740,893, Cl. 46-44.000.
Shioya, Kazuma, to Dijet Industrial Company, Limited. Cutter, particularly for gear hobbing. 3,740,808, Cl. 29-105.00r.
Shiraishi, Tatsuo; Kishiwada, Susumu; Shimizu, Shinkichi; Honmaru, Shigery; Toshira, Hiroshi; and Naogaoka, Yohishi, to Sumitomo Chemical Company, Limited. Catalyst for the production of acrylonitrile. 3,741,910, Cl. 252-437.000.
Shishid, Tadao: *See*—
Iwano, Haruhiko; Shimamura, Isao; Ohi, Reiichi; and Shishid, Tadao, 3,741,765.
Shishido, Tadao: *See*—
Sugiyama, Mitsunori; Ohi, Reiichi; Shishido, Tadao; and Omura, Masaki, 3,741,950.
Shisler, William W. Tobacco smoking and smoke processing device. 3,741,221, Cl. 131-210.000.
Shopalovich, Predrag, to United States of America, Army. Drive-off aid for wheeled vehicles and method. 3,741,479, Cl. 238-14.000.
Shores, Marvin W., to General Dynamics Corporation. Aircraft collision avoidance system by passive means. 3,742,504, Cl. 343-112.0ca.
Shotter, Brian Alfred, to Motor Gear & Engineering Company Limited, The. Universal joints. 3,740,969, Cl. 64-17.00a.
Shuler, Bernard R., to American Air Filter Company, Inc. Air filtering unit including a clamping assembly. 3,740,934, Cl. 55-490.000.
Shunin, Timofei Grigorievich: *See*—
Freidenberg, Anatoly Samuilovich; Basias, Igor Pavlovich; Shakhlin, Vladimir Ilich; Trifonov, Alexei Grigorievich; Shunin, Timofei Grigorievich; Filatov, Andrei Dmitrievich; Privalov, Mikhail Moiseevich; and Ovchinnikov, Gennady Elizarovich, 3,741,083.
Shy, Lamar G.: *See*—
Frost, Wade W.; and Shy, Lamar G., 3,741,052.
Sick, Erwin; Pinior, Gernot; and Plockl, Johann, to Zellweger AG Apparate-und Maschinenfabriken Uster. Reader mechanism for optically discernible characters. 3,742,225, Cl. 250-219.00d.
Siebold, Howard E., to Liquid Controls Corporation. Valve. 3,741,234, Cl. 137-202.000.
Siegel, Eric J., 50% Electronic Visions, Inc., mesne. Color video abstract synthesizer. 3,742,125, Cl. 178-5.20r.
Siegemund, Richard, to Dual Gerbruder Steidinger, Firma. Apparatus for reception of a cassette with a recording carrier material. 3,741,498, Cl. 242-199.000.
Siegle, Gert, to Bosch, Robert, G.m.b.H. Pre-ignition gap for combustion engine ignition systems. 3,742,280, Cl. 313-118.000.
Siegle, Gert, to Bosch, Robert, G.m.b.H. Electrodes. 3,742,282, Cl. 313-311.000.
Siemens Aktiengesellschaft: *See*—
Eggert, Horst, 3,742,169.
Koblick, Christian; Muller, Ernst; and Rambold, Klaus, 3,742,332.
Muther, Manfred, 3,742,167.
Pfaler, Carl-Eric V., 3,741,613.
Volkrodt, Wolfgang, 3,742,268.
Wittenzellner, Ernst, 3,742,257.
Sight & Sound Wedding Albums, Ltd.: *See*—
Breitling, Julius; and Pollack, Bernard, 3,741,565.
Sigma Lutin, narodni podnik: *See*—
Kozusnik, Karel, 3,740,811.
Signetics Corporation: *See*—
Gelabert, Amando E., 3,742,368.
Kan, David T., 3,742,250.
Youmans, Albert P.; and Kirton, Lionel A., 3,740,900.
Signorino, Charles A., to Colorcon Incorporated. Tablets for oral use coated with a stabilized shellac sealing coating. 3,741,795, Cl. 117-100.00a.
Silvern, David Harold; and Minton, Stanley J., to Barodyne, Inc. Surge control for fluid compressors. 3,741,676, Cl. 415-52.000.
Silvern, David Harold; and Minton, Stanley J., to Barodyne, Inc. Flow control apparatus for a centrifugal compressor. 3,741,677, Cl. 415-52.000.
SIMA Societa Italiana Macchine Automaliche S.r.l.: *See*—
Castiglioni, Albino, 3,741,367.
Simko, Aladar O., to Ford Motor Company. Fluid or fuel injection pump assembly. 3,741,685, Cl. 417-214.000.
Simmons, Charles Curtis, to Ransburg Electro-Coating Corp. Method of electrostatically coating hollow articles. 3,741,793, Cl. 117-93.4nc.
Simmons, William G.: *See*—
Gerson, Louis M.; and Simmons, William G., 3,741,397.
Simon-Hartley Limited: *See*—
Robertson, William Swan, 3,741,682.
Simons, Robert E.: *See*—
Aakalu, Nanda Kumar G.; Chu, Richard C.; and Simons, Robert E., 3,741,292.
Simons, Sanford L. Fluid test apparatus and method. 3,741,002, Cl. 73-64.100.
Simrad A.S.: *See*—
Brede, Raymond; and Stenresen, Erik, 3,742,438.
Sinclair & Valentine Company, Inc.: *See*—
Bienert, Walter B.; and Trimmer, Donald S., 3,741,117.
Sinclair-Koppers Company: *See*—
Spicuzza, John P., Jr., 3,742,103.
Singer Company, The: *See*—
Acker, Noel T.; and Radice, John G., 3,740,870.
Newman, Albert L., 3,741,618.
Singleton, Fred G., to Robertson, H. H., Company. Method of making protected metal article. 3,740,822, Cl. 29-419.000.
Sinoski, Donald Alexander. Membrane roof structure. 3,740,902, Cl. 52-2.000.
Sipe, Nelson E.: *See*—
Werth, Elmer D.; Sipe, Nelson E.; and Pearce, Ronald A., 3,741,432.
Sire, Gerard: *See*—
Gerlach, Pierre; and Sire, Gerard, 3,742,292.
Sireren, Gerald E.; and Hansen, Kenneth N., to Allis-Chalmers Corporation. Control linkage for master and transmission clutches. 3,741,356, Cl. 192-3.610.
Sistig, Eberhard; and Reinermann, Karl-Heinz, to Chemische Werke Huls Aktiengesellschaft. Process and apparatus for the continuous determination of water in gases. 3,741,728, Cl. 23-232.00e.
SKF Industrial Trading and Development Company N.V.: *See*—
Asberg, Sture, 3,741,030.
SKF Kugellagerfabriken GmbH: *See*—
Brandenstein, Manfred, 3,741,361.
Skidmore, Charles L. Analog to digital converter. 3,742,486, Cl. 340-347.00p.

Skidmore, Richard H., to Welding Engineers, Inc. Method of separating an insoluble liquid from polymer composition. 3,742,093, Cl. 260-893.000.

Skoe, Ralph E.: *See—*
Gross, Alan E.; Larson, Rodney L.; and Skoe, Ralph E., 3,742,324.

Skoli, Sigmund P.; Witt, Chester J.; and Mojonnier, Harry G. System and method for carbonating beverages. 3,741,552, Cl. 261-140.000.

Slan, Jack, to Dominion Luggage Co., Limited. Soft sided luggage case. 3,741,355, Cl. 190-49.000.

Slant/Fin Corporation, The: *See—*
Limoni, Uri, 3,741,291.

Sleep, Michael Christopher: *See—*
Turner, John Cameron; and Sleep, Michael Christopher, 3,742,021.

Sletzinger, Meyer: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,742,042.

Slocombe, Sidney Charles: *See—*
Cohen, Vivian; and Slocombe, Sidney Charles, 3,742,306.

Slosiarek, Michael L.: *See—*
Davis, Owen K.; Haupt, Robert C.; Hansen, Kenneth N.; and Slosiarek, Michael L., 3,741,329.

Slover, Vasel R., Jr.; Hawk, Daniel E.; and Brady, Jack C. Means to prevent inward leakage across seals in a well tool. 3,741,321, Cl. 175-40.000.

Smagala-Romanoff, Edward A., 12% to Coles, Charles F., 10% to Weld, Christopher M., 1% to Leighton, Sally C., 1% to Hornblower, Henry, 1% to Perrin, Michael J., 1% to Gikas, John and 1% to Tenn, James. Writing implements. 3,741,665, Cl. 401-117.000.

Smallbone, Allan H., to Applied Research Laboratories, Inc. Liquid cell for X-ray fluorescence analysis. 3,742,226, Cl. 250-51.500.

Smedley, William L. Pump-pulling apparatus for wells. 3,741,525, Cl. 254-139.000.

Smeets, Fred, to N.V. "La Citrique Belge". Unsaturated carboxylic salt materials and derivatives thereof. 3,742,029, Cl. 260-481.00r.

Smeets, Fred, to N.V. "La Citrique Belge". Unsaturated carboxylic salt materials and derivatives thereof. 3,742,030, Cl. 260-481.00r.

Smidth, F. L., & Co.: *See—*
Sylvest, Karl Jens, 3,741,715.

Smith, Carl E.; and Musselman, John D., to Smith Electronics, Inc. Low-loss antenna system with counterpoise insulated from earth. 3,742,511, Cl. 343-750.000.

Smith, Carl M., to Minnesota Mining and Manufacturing Company. Curable epoxy organopolysiloxanes having pendant chromophoric groups. 3,741,932, Cl. 260-46.50e.

Smith, Clair C.: *See—*
Clayton, William J.; Smith, Clair C.; and Dewey, Earl K., 3,741,452.

Smith, Donald F.: *See—*
Byrne, Joseph E.; Clifford, Gilbert F.; Smith, Donald F.; and Odell, Arthur W., 3,741,053.

Smith, Donald W.: *See—*
Farnham, Robert E.; Prill, Fredric W.; Smith, Donald W.; and Plociennik, James L., 3,741,532.

Smith, Edward W. Self resonant drive for deep well pump. 3,741,686, Cl. 417-240.000.

Smith Electronics, Inc.: *See—*
Smith, Carl E.; and Musselman, John D., 3,742,511.

Smith, Francis E., to Airco, Inc. Gas proportioning and pressure cycling apparatus for welding equipment. 3,741,456, Cl. 228-41.000.

Smith, George H., to Minnesota Mining and Manufacturing Company. Novel photosensitive polymerizable systems and their use. 3,741,769, Cl. 96-35.100.

Smith, George R. Fish fillet aid. 3,740,794, Cl. 17-70.000.

Smith, Henry I.: *See—*
Spears, David L.; Smith, Henry I.; and Stern, Ernest, 3,742,230.

Smith, Henry I.; Spears, David L.; and Stern, Ernest, to Massachusetts Institute of Technology. Soft-X-ray mask alignment system. 3,742,229, Cl. 250-65.00r.

Smith, Horace L., Jr., to Smitherm Industries, Inc. Freeze drying method and apparatus. 3,740,860, Cl. 34-5.000.

Smith, Ian Edward; Hastwell, Peter John; and Vermeulen, Marinus Corneius, to Savin Business Machines Corporation. Pneumatic assembly for removing excess developer liquid from photoconductive surfaces. 3,741,643, Cl. 355-10.000.

Smith, James E., to Westinghouse Electric Corporation. Adaptor for mounting conventional through-type current transformers on flat spade terminals. 3,742,410, Cl. 336-65.000.

Smith, Joseph E.; DeTroyer, Georges D.; and DeSantis, Raymond P., to Wolverine-Pentronix, Inc. Remote control system for powder compacting presses. 3,741,697, Cl. 425-78.000.

Smith, Joseph L., Jr., to Massachusetts Institute of Technology. Superconducting apparatus with double armature structure. 3,742,265, Cl. 310-52.000.

Smith, Judson D.: *See—*
Dyer, Kermit W.; Handley, John V.; and Smith, Judson D., 3,741,619.

Smith Kline & French Laboratories: *See—*
Whitecar, Alten E., 3,741,387.

Smith, Leslie William: *See—*
Pass, Peter John; Carr, Douglas Wesley; Knight, Rogers Evert; Gelder, Ronald; Morrell, Moreton; Smith, Leslie William; Harris, Leonard Frederick; and Van Bastelaere, Karel Leon August, 3,741,236.

Smith, Otto J. M. Method, apparatus and system for the identification of the relationship between two signals. 3,742,391, Cl. 333-6.000.

Smith, Peter William, to Bell Telephone Laboratories, Incorporated. Apparatus for stabilizing a laser to a gas absorption line. 3,742,382, Cl. 331-94.500.

Smith, Raymond P., Jr., to Craftmaster, Inc. Leak prevention system for an oil pipeline. 3,741,233, Cl. 137-117.000.

Smith, Richard D.; and Furlong, Dale A., to Combustion Power Company, Inc. Solid waste disposal and water purification method and apparatus. 3,741,890, Cl. 210-40.000.

Smith, Vernon O.; and Binns, John W., to Overhead Door Corporation. Latch and lock structure. 3,740,978, Cl. 70-100.000.

Smith, William R.: *See—*
Baumann, Frederick W.; Smith, William R.; MacNary, Robert G.; Miller, Albert R.; Pangburn, William W.; Rosenberry, George M., Jr.; and Kaczkowski, Bernard C., 3,741,278.

Smitherm Industries, Inc.: *See—*
Smith, Horace L., Jr., 3,740,860.

Smiths Industries Limited: *See—*
Embling, Clifford Arthur; and Harrison, Alban, 3,742,494.

Smolker, Gary S.: *See—*
Keisler, Frank Z.; and Smolker, Gary S., 3,742,120.

Snelling, Christopher, to Xerox Corporation. Photoelectrophoretic imaging by phosphorescence. 3,741,639, Cl. 355-3.000.

Snelling, Christopher, to Xerox Corporation. Imaging system. 3,741,760, Cl. 96-1.200.

Snelling, Christopher, to Xerox Corporation. Transducer device. 3,742,374, Cl. 328-110.000.

Snipeliski, Jacques, to Cotherm S.A. Thermal tripping devices for safety installations and the like. 3,742,417, Cl. 337-401.000.

Snitka, Galina Grigorievna: *See—*
Shindelman, Jury Iosifovich; Akulova, Galina Iosifovna; Snitka, Galina Grigorievna; Vasyagin, Nikolai Ivanovich; and Tyabirdin, Vladimir Vasilievich, 3,742,278.

Snurr, Gordon R. Quick adjustable height support. 3,741,514, Cl. 248-412.000.

Soberski, George A., to Eaton Yale & Towne Inc. Valve for evaporative loss control. 3,741,232, Cl. 137-102.000.

Sobieralski, Leo J., to Bendix Corporation, The. Vacuum intensifier. 3,741,684, Cl. 417-14.000.

Societe Anonyme Automobiles Citroen: *See—*
Ravenel, Raymond, 3,741,042.

Societe Anonyme dite: Orsymonde: *See—*
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Societe anonyme dite: Societe Industrielle pour la Fabrication des Antibiotiques (SIFA): *See—*
Boissier, Jacques Robert; and Ratouis, Roger, 3,742,070.

Societe Anonyme dite:-Valloures (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies): *See—*
Peytavin, Pierre, 3,740,988.

Societe Anonyme: Glaenzer Spicer: *See—*
Orain, Michel, 3,740,968.

Societe d'Etude et de Construction de Chaudiers en Acier-Seccacier: *See—*
Pierre, Raymond Paul, 3,741,168.

Societe d'Etudes et de Documentation Electronique (SEDELEC): *See—*
Cayla, Yves, 3,741,112.

Societe d'Etudes Recherches et Constructions Electroniques (S.E.R.C.E.L.): *See—*
Lefevre, George; and Angelie, Philippe, 3,742,489.

Societe d'Exploitation des Brevets Neiman: *See—*
Lipschutz, Paul, 3,742,161.

Societe Francaise d'Equipment Menager: *See—*
Chambon, Rene, 3,741,046.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Rouger, Henri Andre, 3,741,175.

Soehngen, John W.: *See—*
Jamison, Saunders E.; and Soehngen, John W., 3,742,104.

Sognefest, Peter W.; and Estes, Bay E., III, to Essex International Inc. Digital indicating and control apparatus and method. 3,742,447, Cl. 340-52.00f.

Solar, Carl M.: *See—*
Haselwood, Donald E.; and Solar, Carl M., 3,742,462.
Haselwood, Donald E.; and Solar, Carl M., 3,742,463.

Solberg, Per: *See—*
Boyum, Oystein; Eriksen, Karsten Eigil; Solberg, Per; and Tveten, Kjell, 3,742,100.

Solokhin, Boris Ivanovich; and Rubinchik, Galina Markovna. Tooth for the bucket of a digging machine. 3,740,876, Cl. 37-142.00a.

Solvay & Cie: *See—*
Duikers, Marcel, 3,741,705.

Sommer, Neithart: *See—*
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Sonati, Attilio, to Inverni della Beffa S.p.A. 17-Monochloroacetyl ajmaline and pharmaceutically acceptable salts thereof. 3,741,972, Cl. 260-293.530.

Sony Corporation: *See—*

Fujiwara, Yoshio; Naito, Keiichi; and Odajima, Toru, 3,741,858.
Morio, Minoru; Suzuki, Tadahiko; and Nakagawa, Yutaka, 3,742,242.

Sorensen, Robert P.; and Strombeck, Leo, to Anderson Bros. Mfg. Co. Carton infeed and erecting apparatus. 3,741,082, Cl. 93-53.00r.

Sorokovsky, Vladislav Kazimirovich; Bogachev, Anatoly Vasilievich; and Kuznetsov, German Ivanovich. Machine for lapping spiral bevel and hypoid gears. 3,740,899, Cl. 51-26.000.

South African Farm Implement Manufacturers, Limited: *See*—
Ward, Walter H., 3,741,437.

Southwest Research Institute: *See*—
Mallow, William A.; Owen, Richard A.; and Baker, Ethelbert J., Jr., 3,741,898.

Southwestern Industries, Inc.: *See*—
Culver, Irven H., 3,740,856.

Spannlang, Ronald, to Vereinigte Osterreichische Eisen- und Stahlwerk Aktiengesellschaft. Converter handling vehicle. 3,741,407, Cl. 214-1.00d.

Spanos, William M., to International Telephone and Telegraph Corporation. Multimode discone antenna. 3,742,510, Cl. 343-730.000.

Sparks, Brian Edmund, to Lucas, Joseph, (Industries) Limited. Temperature sensitive flow-dividing valve. 3,741,477, Cl. 236-93.000.

Spataru, Eugen: *See*—
Constantinescu, Dorin; Cruceanu, Sever; Spataru, Eugen; and Mereanu, Nicolae, 3,741,323.

Spears, David L.: *See*—
Smith, Henry I.; Spears, David L.; and Stern, Ernest, 3,742,229.

Spears, David L.; Smith, Henry I.; and Stern, Ernest, to Massachusetts Institute of Technology. Soft X-ray mask support substrate. 3,742,230, Cl. 250-65.00r.

Specht, Theodore R., to Westinghouse Electric Corporation. Surge generator for transformer testing. 3,742,346, Cl. 324-55.000.

Spellman, Patrick J.; Oltman, John E.; and Sanden, Gerald, to ESB Incorporated. Battery having gas pervious, liquid impervious member sealed over hole in top. 3,741,812, Cl. 136-107.000.

Spenadel, Lawrence; and Longwell, John P., to Esso Research and Engineering Company. Liquid oxidizers containing NF_3 groups thickened with polymeric compounds. 3,741,832, Cl. 149-109.000.

Spencer, William Meyer, to Bendix Corporation, The. Single-wire control of RCCB or relay. 3,742,313, Cl. 317-155.500.

Sperry Rand Corporation: *See*—
Benrud, Vernal M.; and Horst, Richard L., 3,742,467.
Braddon, Frederick D., 3,741,145.
Crosby, Clinton D., 3,742,469.
Englund, Robert M., 3,742,460.
Kiedrowski, James A., 3,742,340.
Liden, Sam P., 3,741,500.

Sperry Sun Well Surveying Company: *See*—
Lindsey, James M., 3,742,444.

Sperry-Sun Well Surveying Company: *See*—
Hering, Donald R.; and Lindsey, James M., 3,741,013.

Spicuzza, John P., Jr., to Sinclair-Koppers Company. Method for preparing and molding expandable, non-equimolar styrene-maleic acid half ester copolymer particles. 3,742,103, Cl. 264-53.000.

Spielberger, Seynour C., to Barnes Engineering Company. Thermistor bolometer having a built-in source. 3,742,231, Cl. 250-83.30h.

Spigwoerk, Christiania, Division Jobu: *See*—
Kasin, Hans; and Thvedt, Odd Krane, 3,741,526.

Spinks, Albert Hunter: *See*—
Buck, Robert Grainger; Deltuvia, John Joseph, Sr.; and Spinks, Albert Hunter, 3,742,155.

Spivack, John Denon, to Ciba-Geigy Corporation. Phosphinic acids and esters of alkylated p-hydroxyphenylalkanes. 3,742,096, Cl. 260-953.000.

Spofford, Walter Richardson, Jr.: *See*—
Donald, Raymond George; Spofford, Walter Richardson, Jr.; and Pomerantz, Daniel Ira, 3,742,259.

Spreitzhofer, Ernst, to Bodenseewerk Perkin-Elmer & Co., GmbH. Peak integrator. 3,742,202, Cl. 235-183.000.

Square D Company: *See*—
Schaefer, Carl A., 3,742,166.
Schmidt, John E., 3,742,121.

Squibb, E. R., & Sons, Inc.: *See*—
Breuer, Hermann, 3,741,962.
Dursch, Friedrich; and Kocy, Octavian, 3,741,963.
Yale, Harry Louis; and Petigara, Remesh, 3,741,983.

Sroke, Werner: *See*—
Schroll, Josef; and Sroke, Werner, 3,741,283.

Stache, Ulrich: *See*—
Radscheit, Kurt; Stache, Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,741,955.
Radscheit, Kurt; Stache, Ulrich; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,741,956.

Staco-Switch, Inc.: *See*—
Wells, Robert R.; and Nelson, Donald O., 3,742,446.

Stafford, Ronnie L.: *See*—
Christian, Donald K.; and Stafford, Ronnie L., 3,740,970.

Stalker, Lee F., to Goodrich, B. F. Company, The. Tank cleaner. 3,741,808, Cl. 134-58.00r.

Stamicarbon N.V.: *See*—
Zihp, Jan W. H.; and Bosch, Hendrik, 3,742,109.

Standard Oil Company: *See*—
Stoffer, Robert L.; and Nevitt, Thomas D., 3,742,065.

Standard Oil Company, The: *See*—
Duke, June T.; and Prem, Dorothy C., 3,742,092.

Standard Register Company, The: *See*—
Parenti, Frank V.; and Staneck, Robert W., 3,741,451.

Staneck, Robert W.: *See*—
Parenti, Frank V.; and Staneck, Robert W., 3,741,451.

Stanfield, Trevelyan A., to Becton, Dickinson and Company. Fractional-fill pipette assembly. 3,741,732, Cl. 73-425.40p.

Stanford Research Institute: *See*—
Anbar, Michael, 3,741,809.
Bahr, Alfred J.; and Podell, Allen F., 3,742,396.
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Staniforth, Eric: *See*—
Hargreaves, Derek Burtt; and Staniforth, Eric, 3,741,442.

Stanke, Walter; and Mertens, Gottfried, to Heinvich Koppers Gesellschaft mit beschrankter Haftung. Method of cleaning the sealing surfaces of doors and door jambs of by-product coke ovens. 3,741,806, Cl. 134-6.000.

Stanley Works, The: *See*—
Whitehouse, Hugh L., 3,740,999.

Stapleton, Thomas F., to General Motors Corporation. Cryogenic chemical deburring. 3,741,804, Cl. 134-3.000.

Star Cutter Company: *See*—
Lincoln, Herbert R., 3,741,465.

Starline, Inc.: *See*—
Gay, James E., 3,740,935.

Starnes, William H., Jr., to Esso Research and Engineering Company. Hindered phenoxy radicals. 3,741,906, Cl. 252-182.000.

Startin, Kenneth John, to AMP Incorporated, mesne. Electrical connector assembly. 3,742,424, Cl. 339-14.00p.

States, Ronald Frederick, to Desoutter Brothers Limited. Power-operated impact wrench or screwdriver. 3,741,313, Cl. 173-12.000.

Stauble AG: *See*—
Kleiner, Walter Gustav; and Hoenig, Ernst Josef, 3,741,257.

Stauffer Chemical Company: *See*—
Fon Toy, Arthur Dock; and Rattenbury, Kenneth H., 3,742,040.
Shim, Kyung S., 3,742,058.
Tilles, Harry, 3,742,005.
Walsh, Edward N., 3,742,095.

Stefanoiu, Constantin C., to Uzina de Alumina Oradea. Apparatus for stirring and transporting slurries. 3,741,530, Cl. 259-67.000.

Stefansen, Kaj E.; and Cullip, Jack D. Handcuff cover assembly. 3,740,977, Cl. 70-16.000.

Steiger, Edward L.: *See*—
Dietrich, Heinz J.; and Steiger, Edward L., 3,742,054.

Steiger, Edward L.; and Dietrich, Heinz J., to Owens-Illinois, Inc. Mesomorphic preparation. 3,742,053, Cl. 260-566.00f.

Steiger, Edward L.; and Dietrich, Heinz J., to Owens-Illinois, Inc. Alkyl-stilbene liquid-crystal compounds. 3,742,067, Cl. 260-613.00a.

Stenresen, Erik: *See*—
Brede, Raymond; and Stenresen, Erik, 3,742,438.

Stenstrom, Lennart Arvid, to Alfa-Laval AB. Apparatus for heat treating packaged products. 3,741,563, Cl. 269-287.000.

Stepanian, Ernst Arakelovich: *See*—
Sarkisov, Rafael; Stepanian, Ernst Arakelovich; Ovanesov, Jury Vagarshevich; and Maltsev, Vladimir Vasilievich, 3,741,055.

Stern, David, to Combined Optical Industries Limited. Antiglare mirror with one reflecting face formed of an array of prisms. 3,741,632, Cl. 350-281.000.

Stern, Ernest: *See*—
Smith, Henry I.; Spears, David L.; and Stern, Ernest, 3,742,229.
Spears, David L.; Smith, Henry I.; and Stern, Ernest, 3,742,230.

Sterner, Eric, to Telefonaktiebolaget L M Ericsson. Mounting clamps supporting stacked printed circuit boards. 3,742,309, Cl. 317-101.00d.

Stevens, Charlie R. Dual-mode solid state relay. 3,742,255, Cl. 307-252.00t.

Stevens, Frederick F., Jr., to Hoff-Stevens, Inc. Rotary selector valve mechanism. 3,741,248, Cl. 137-627.000.

Stewart, Donald T.; and McAlpine, Ian, to British Aluminum Company Limited, The. Stabilized zirconium salts. 3,741,782, Cl. 106-162.000.

Stewart, Patrick B.: *See*—
Hess, Fritz K.; Stewart, Patrick B.; Zeile, Karl; and Freter, Kurt, 3,741,951.

Stewart, Paul E.; and Davis, Dale M., to United States of America, Air Force. Feed system for a non-rotating multi-barrel gun. 3,741,069, Cl. 89-11.000.

Stickler, Charles W., Jr., to Gray Tech Industries, Inc. Method of making a cast concrete house having integral walls and roof using mobile interior forms. 3,742,102, Cl. 264-32.000.

Stiernstrom, Lars: *See*—
Hallen, Jan-Ake; and Stiernstrom, Lars, 3,742,245.

Stiglitz, Martin R.; and Sethares, James C., to United States of America, Air Force. Multi-frequency microstrip filter-detector. 3,742,390, Cl. 333-6.000.

Stinnes, Mathias Ludwig, to Du Pont of Canada, Limited. Preformed building panel with weather-proof seal. 3,740,909, Cl. 52-302.000.

Stocker, August: *See*—
Arni, Urs; Faucci, Adriano; and Stocker, August, 3,742,020.

Stocker, August; Marti, Othmar; Pfammatter, Theodul; and Schreiner, Gerhart, to Lonza Ltd. Process for the production of pyridine carboxylic acids from lower alykyl pyridines. 3,741,976, Cl. 260-295.50r.

Stockton, Thomas R., to Ford Motor Company. Reversely drivable fluidic device. 3,741,693, Cl. 418-15.000.

Stoffer, Robert L.; and Nevitt, Thomas D., to Standard Oil Company. Process for forming diethylsulfide or dipropylsulfide. 3,742,065, Cl. 260-609.00a.
Stoltze, Morton. Binocular spectacles. 3,741,634, Cl. 351-57.000.
Stookey, Kenneth W., to Torrax Systems, Inc. Tap system for molten materials. 3,741,136, Cl. 110-165.00r.
Storfer, Stanley T., to Esso Production Research Company. Chemically modified organic polymers. 3,741,894, Cl. 252-8.50c.
Stratman, Jerome F.; and Novak, John, to Tappan Company, The. Trash compactor. 3,741,108, Cl. 100-229-a.
Stratton, Andrew, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Air traffic control systems. 3,742,503, Cl. 343-112.0tc.
Strauss, Howard J., to Gould Inc. Throw-away flashlight. 3,742,207, Cl. 240-10.680.
Streeter, Glen E. Seat tilting structure. 3,741,511, Cl. 248-371.000.
Strobel, Albert, to ITE Imperial Corporation. Multi-pole latch system having means to defeat single pole latching. 3,742,401, Cl. 335-9.000.
Strombeck, Leo: *See—*
Sorensen, Robert P.; and Strombeck, Leo, 3,741,082.
Stromberg-Carlson Corporation: *See—*
Pommerening, Uwe A., 3,742,197.
Stroterhoff, Howard L., to United States of America, Army. Arsenic sampler. 3,741,727, Cl. 23-230.00r.
Stuard, Charles D., to Procter & Gamble Company, The. Method of making a tear-open closure. 3,741,142, Cl. 113-121.00c.
Stubblefield, Steven A.: *See—*
Pamn, Keh; and Stubblefield, Steven A., 3,742,435.
Stube, Richard: *See—*
Stube, Richard; and Rimanek, Gunther (said Rimanek assor. to said), 3,741,325.
Stube, Richard; and Rimanek, Gunther, said Rimanek assor. to said Stube, Richard. Weighing mechanisms. 3,741,325, Cl. 177-32.000.
Stuber, Fred A.: *See—*
Sayigh, Adnan A. R.; Stuber, Fred A.; and Ulrich, Henri, 3,741,794.
Stumpf, Gunter. Control device for guide motion reversal and the regulation of travelling speed of machines and especially fabric folding machines. 3,741,534, Cl. 270-31.000.
Sturany, Herbert, to Wiener Metallwarenfabrik Smolka & Co. Ski boot with a sole which resists bending. 3,740,873, Cl. 36-2.5al.
Sturm, Theodor F. Capacitor discharge ignition system. 3,741,183, Cl. 123-148.00e.
Stutzman, William E.: *See—*
Walters, Blaine F.; Stutzman, William E.; and Fink, Ray S., 3,741,848.
Su, Aaron Chung Liong, to Du Pont de Nemours, E. I., and Company. Rhodium based catalysts for the synthesis of 1,4-dienes. 3,742,080, Cl. 260-680.00b.
Suelzlt, Larry R.: *See—*
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Sugano, Hitoshi: *See—*
Wakai, Shuzo; and Sugano, Hitoshi, 3,742,128.
Sugano, Hitoshi; and Tanaka, Akio, to Matsushita Electronics Corporation. DC voltage regulator circuit. 3,742,338, Cl. 323-22.00t.
Sugimoto, Kaname: *See—*
Mitsuhaghi, Masakazu; Hirao, Mamoru; and Sugimoto, Kaname, 3,741,776.
Sugimura, Sadaji, to Yazaki Corporation. Recording apparatus for use with a taximeter. 3,742,514, Cl. 346-33.00r.
Sugiyama, Mitsunori; Ohi, Reiichi; Shishido, Tadao; and Omura, Masaki, to Fuji Photo Film Co., Ltd. Method for hardening gelatin. 3,741,950, Cl. 260-117.000.
Sugiyama, Takashi, to Yokogawa Electric Works, Ltd. Method and apparatus for changing measuring items and measuring ranges. 3,742,354, Cl. 324-115.000.
Sugland, Wolfgang: *See—*
Heimann, Alfred; and Sugland, Wolfgang, 3,741,138.
Sullivan, Joseph L. O., to Seaboard Systems, Inc. Monitoring system. 3,742,133, Cl. 178-6.000.
Sulzer Brothers Ltd.: *See—*
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Sumitomo Chemical Co., Ltd.: *See—*
Seki, Takashi; Toki, Katsuyuki; Nakatani, Hiroshi; Suzuki, Yoshio; Fukushima, Hideaki; and Nawashiro, Yoshio, 3,741,999.
Sumitomo Chemical Company, Limited: *See—*
Shiraishi, Tatsuo; Kishiwada, Susumu; Shimizu, Shinkichi; Honmaru, Shigery; Toshira, Hiroshi; and Naogaoka, Yohishi, 3,741,910.
Sumitomo Chemical Company, Ltd.: *See—*
Fujinami, Akira; Ozaki, Toshiaki; Nodera, Katsuji; Akiba, Keiichiro; Yamamoto, Sigeo; Ianaka, Katsutoshi; and Ooishi, Tadashi, 3,741,981.
Sumitomo Electric Industries, Ltd.: *See—*
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Sumitomo Special Metal Company Limited: *See—*
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Sumiyoshi, Makoto: *See—*
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Summa, Frank. Heating coils. 3,741,478, Cl. 237-73.000.
Summa, Frank. Kaliedo-light. 3,742,206, Cl. 240-10.100.
Summers, Charles R. Card actuated control system for display signs. 3,742,485, Cl. 340-339.000.
Sunbeam Business Equipment Co.: *See—*
Reick, Kenneth R.; and Wolff, David F., 3,741,642.
Sundbye, Earl W., to Continental Electronics Manufacturing Company. Dummy load system. 3,742,188, Cl. 219-323.000.
Sundial Manufacturing Corporation: *See—*
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Sundstrand Corporation: *See—*
Polaski, David N., 3,740,950.
Sunstein, David E. High voltage interconnection system for cathode-ray tubes and the like. 3,742,247, Cl. 307-202.000.
Suozzo, John, to Westinghouse Electric Corporation. Integrated elevator construction. 3,741,351, Cl. 187-95.000.
Superior Electric Company, The: *See—*
Giguere, Irving Jules, 3,742,329.
Supreme Equipment & Systems Corporation: *See—*
Castaldi, John A.; and Goetz, Herbert, 3,741,469.
Surrall, Alan John, to British Leyland Truck and Bus Division Limited. Method of fabricating a composite seal having a refractory oxide surface. 3,741,818, Cl. 147-6.300.
Sutton, Charles O., to Pak-Well Corporation, mesne. Apparatus for forming a continuous assembly of envelopes or the like. 3,741,085, Cl. 93-61.00r.
Suvada, Paul. Attachment device. 3,741,129, Cl. 108-43.000.
Suzuki, Koji: *See—*
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Suzuki, Tadahiko: *See—*
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Svaty, Vladimir, to Elitex Zavody textilniho strojirenstvi generalni reditelstvi. Gripper shuttle. 3,741,258, Cl. 139-125.000.
Sverdrup & Parcel and Associates, Inc.: *See—*
Newman, Owen G., 3,740,782.
Svetlichny, Oleg, to Geosystems, Inc. Computer-aided laser-based airborne measurement system. 3,741,653, Cl. 356-141.000.
Swan Corporation: *See—*
Moore, John W., 3,740,908.
Swanson, Harry Gustav: *See—*
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Sweet, Bill M.; Hundeby, Gary T.; and Baldwin, Charles R., to Minnesota Mining & Manufacturing Corporation. Foldable barricade and sign. 3,740,880, Cl. 40-125.000.
Swenson, Thomas C.: *See—*
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Swift & Company: *See—*
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Swift, Thomas E.; and Brayley, Elwin J., to Eltra Corporation. Capacitor discharge ignition system. 3,741,185, Cl. 123-148.00e.
Swithenbank, Colin: *See—*
McLaughlin, Thomas A.; Swithenbank, Colin; and Yih, Roy Y., 3,742,051.
Sybron Corporation: *See—*
White, Jack Mort, 3,741,028.
Sylvest, Karl Jens, to Smidth, F. L., & Co. Method and apparatus for providing heat exchange. 3,741,715, Cl. 432-16.000.
Syntex Corporation: *See—*
Fried, John H., 3,741,985.
Szabo, Andras I.: *See—*
Santis, Dean C.; Wavre, Andre; and Szabo, Andras I., 3,742,409.
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Szczepanski, Harry. Masking fixture for spray painting. 3,741,154, Cl. 118-503.000.
Taber, David. Synergistic antiseptic compositions containing a halogenated anilide of thiophene carboxylic acid. 3,741,952, Cl. 252-107.000.
Takada, Takezo, to Takata Kojyo Co., Ltd. Automatic locking retractor system with stopper device. 3,741,495, Cl. 242-107.400.
Takada, Yoshiro; and Yamashita, Maki, to Minolta Camera Kabushiki Kaisha. Device for operating main switch of exposure indicating circuit in camera. 3,741,089, Cl. 95-10.00c.
Takahama, Teizo: *See—*
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Yabe, Masaya; Kono, Masaru; Takahama, Teizo; and Hirono, Katsumi, 3,742,380.
Takahashi, Kenji, to Kanegafuchi Boseki Kabushiki Kaisha. Method for efficiently separating slurry-state liquid into solid part and liquid part and an apparatus therefor. 3,741,388, Cl. 210-67.000.
Takahashi, Satoshi: *See—*
Mori, Hiroshi; Yamamoto, Michio; Kondo, Chitoshi; Kimoto, Teruhisa; Takahashi, Satoshi; and Ochi, Toshiyuki, 3,742,027.
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Takami, Toshio: *See—*

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Takeda Chemical Industries, Ltd.: *See—*
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Tamai, Iwao; and Yokoi, Kenji, to Lion Fat & Oil Co., Ltd. Method for preparation of urethanated hydroxyalkane sulfonates. 3,742,035, Cl. 260-482.00c.
Tampo Manufacturing Company, Inc.: *See—*
Harris, Jesse W., 3,741,669.
Tamura, Kohzoh, to Kabushikikaisha Tokyo Keiki. Ultrasonic current meter. 3,741,014, Cl. 73-194.00a.
Tanabe Seiyaku Co., Ltd.: *See—*
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Tanaka, Akio: *See—*
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Tanaka, Harumi, to Minolta Camera Kabushiki Kaisha. Film magazine. 3,741,096, Cl. 95-31.0ca.
Tanaka, Masaaki: *See—*
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Tanner, James L.; and Rist, Bruno A., to Tanner Electronic Systems Technology, Inc. Electro-mechanical switching system. 3,741,184, Cl. 123-148.00e.
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Tarves, Robert J., Jr. Method of repairing damaged holes in a boiler drum. 3,740,820, Cl. 29-401.000.
Tatsuno, Hiyoshi. Pipe coupling with safety valve. 3,741,521, Cl. 251-149.700.
Taylor, Harry M.: *See—*
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Taylor Industries, Inc.: *See—*
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Taylor, L. James; and Nichols, Charles E., Jr., to Merry Companies Incorporated. Simulated brick panels. 3,740,910, Cl. 52-315.000.
Taylor, Philip W., to Taylor Industries, Inc. Sectional assembly of insulating enclosures for fuses. 3,742,413, Cl. 337-201.000.
T.D.K. Electronics Company, Ltd.: *See—*
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Terral, Ben D., to Camco, Incorporated. Sidepocket mandrel. 3,741,299, Cl. 166-117.500.
Terral, Ben D., to Camco, Incorporated. Positioning tool. 3,741,303, Cl. 166-214.000.
Tesdahl, Thomas C.: *See—*
Crotty, Homer L.; Coffey, Charles R.; and Tesdahl, Thomas C., 3,741,805.
Texaco Inc.: *See—*
Goldsby, Arthur R., 3,742,081.
Holder, Charles B.; Rubin, Isaac D.; and Cusano, Carmen M., 3,742,088.
Pamn, Keh; and Stubblefield, Steven A., 3,742,435.
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Wolf, Robert L.; and McGann, Rodney, 3,740,949.
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Texas Gas Transmission Corporation: *See—*
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Texas Instruments, Incorporated: *See—*
Blair, Charles M., 3,742,449.
Breitzmann, John F.; and Lackey, Robert P., 3,742,384.
Buchinski, Joseph J.; and Zenuk, Charles H., 3,740,828.
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Thacker, Stephen Ernest William, to Scovill Manufacturing Company. Valves for tubeless tires. 3,741,267, Cl. 152-427.000.
Thermasan Corporation: *See—*
Sargent, Charles L., 3,740,773.
Thiele, Geraldine H. Method of treating bone fractures and non-unions. 3,741,204, Cl. 128-92.00r.
Thiele, Rudolf, to Fried Krupp Gesellschaft mit bescharankter Haftung. Signal transmission system. 3,742,437, Cl. 340-3.00d.
Thiokol Chemical Corporation: *See—*
Hendrickson, Roger R.; Munson, William O.; Reed, Russell; and Shaw, Graham C., 3,741,585.
Lovingham, Joseph J., 3,740,945.
Wall, Robert M., 3,741,830.
Thom, Ian Graham, to Ferranti Limited. Projection apparatus. 3,741,454, Cl. 226-179.000.
Thomas, Robert: *See—*
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Thompson, Francis T.; and Wavre, Andre, to Westinghouse Electric Corporation. Power regulation system. 3,742,251, Cl. 307-242.000.
Thompson, James C., to United Aircraft Corporation. Cutting torch. 3,741,135, Cl. 110-22.00r.
Thompson, John T.; and Gillemot, George W. Safety package assembly and divides clamp therefor. 3,741,381, Cl. 206-47.00a.
Thomson-CSF: *See—*
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Ticknor, Raymond G., to Xerox Corporation. Xerographic roller oscillating cleaning blade with drive mechanism therefor. 3,740,789, Cl. 15-256.530.
Tietjens, Eduard Willem, to U.S. Philips Corporation. Shaving head having separately sprung blades. 3,740,843, Cl. 30-43.600.
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Tillander, Hans, to Astra-Meditec AB. Varicer bougie. 3,741,214, Cl. 128-303.00r.
Tilles, Harry, to Stauffer Chemical Company. Herbicidal thiolcarbamates. 3,742,005, Cl. 260-455.00a.
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Timmermans, Abraham, to U.S. Philips Corporation. Device for producing stimulated infrared emission, an iraser by means of an

electric discharge in a gas mixture which consists partly of carbon dioxide and discharge tube for such a device. 3,742,378, Cl. 31-94.500.
Toaka Dyestuffs Manufacturing Co., Ltd.: *See*—
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Toepper, George G., to Universal Oil Products Company. Method of fabricating a flexible connector. 3,740,832, Cl. 29-508.000.
Toki, Katsuyuki: *See*—
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Tokyo Shibaura Electric Company: *See*—
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Tomalia, Donald A., to Dow Chemical Company, The. Polymeric reaction product of a dithiol with 2,2'-alkylenebis-2-oxazoline or oxazine. 3,741,944, Cl. 260-79.000.
Tomaszewski, Donald E., to General Motors Corporation. Inconspicuous vehicle mounted radio antenna. 3,742,508, Cl. 343-713.000.
Tomeco, Inc.: *See*—
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Toray Engineering Co., Ltd.: *See*—
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Toray Industries, Inc.: *See*—
Kiuchi, Hiroshi; Oshima, Keisuki; Nishidoi, Takashi; and Aya, Toshihiko, 3,742,090.
Tordjman, Roger. Dry decalcomania. 3,741,787, Cl. 117-3.100.
Torin, Jan Magnus. Method for measuring the light transmission of a photographic film giving a digitized output. 3,741,664, Cl. 356-203.000.
Torrax Systems, Inc.: *See*—
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Toshira, Hiroshi: *See*—
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Toti, Andrew J. Structural assembly joint and method forming same. 3,741,593, Cl. 287-184.36d.
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Ono, Isao; Yanagihara, Tadahisa; Koga, Toshikuni; Kato, Takao; and Okada, Hiroaki, 3,742,039.
Toyoda, Takashi; Miyabe, Yoshio; and Coba, Yozo, to Kabushiki Kaisha Oji Yuka Goseishi Kenkyujo. Production of synthetic papers. 3,741,841, Cl. 156-229.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
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Travaglio, Dalny, to Universal Pneumatic Controls, Inc. Pneumatic thermostat. 3,741,476, Cl. 236-87.000.
Treer, Steven J. Tool holder for a machine tool or the like. 3,741,573, Cl. 279-81.000.
Trifonov, Alexei Grigorievich: *See*—
Freidenberg, Anatoly Samuilovich; Basias, Igor Pavlovich; Shakhlin, Vladimir Ilich; Trifonov, Alexei Grigorievich; Shunin, Timofei Grigorievich; Filatov, Andrei Dmitrievich; Privalov, Mikhail Moiseevich; and Ovchinnikov, Gennady Elizarovich, 3,741,083.
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Triplett, Lloyd M. Grain treating apparatuses and processes of operation thereof. 3,741,717, Cl. 432-105.000.
Tripp, Robert W., to Inductosyn Corporation. Scale of two improved digital and analog converter. 3,742,487, Cl. 340-347.0da.
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Hayden, Rodney; and MacDonald, Dennis Herbert, 3,742,405.
Martin, Jon W.; Jones, John F.; and Bell, Jeffrey L., 3,741,931.
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Tsuchihashi, Genichi; and Ogura, Katsuyuki, to Sagami Chemical Research Center. Ether and thioether methyl sulfoxides. 3,742,066, Cl. 260-609.00a.
Tsukihosh Gomu Kabushiki Kaisha: *See*—
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Tulp, Wijbrand Jan, to N.V. Machinefabriek Stork-Jaffa. Apparatus operating on the displacement principle and usable both as a pump and as a motor. 3,741,076, Cl. 91-480.000.
Tunc, Deger, to Johnson & Johnson. Hair preparation. 3,741,783, Cl. 106-189.000.
Turner, John Cameron; and Sleep, Michael Christopher, said Turner assor. to Biorex Laboratories Limited. Derivatives of glycyrrhetinic acid. 3,742,021, Cl. 260-468.500.
Turner, Phillip H.: *See*—
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Tyabirdin, Vladimir Vasilievich: *See*—
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Uchida, Kozo; Nakaya, Naohisa; and Suzuki, Koji, to Iwatsu Electric Company Limited. Automatic synchronizing system with repetitive search and rapid acquisition. 3,742,372, Cl. 328-63.000.
Uchida, Kozu. Sampling system. 3,742,290, Cl. 315-25.000.
Uchida, Yoshihisa: *See*—
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Ueber, Russel C.: *See*—
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Ueda, Seinosuke; and Kato, Koso, to Hayashibara Company. Method for the stabilization of alpha-1,6-glucosidases. 3,741,873, Cl. 195-68.000.
Uemura, Saburo. Visual recording system for video signal. 3,742,134, Cl. 178-6.6dd.
Uetani, Masanori: *See*—
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Ukuma, Toshiyuji; and Nagai, Hisakuni, to Fuji Photo Film Co., Ltd. Driving means for automatic curved line following device. 3,742,220, Cl. 250-202.000.
Ullrich, Martin; Erdmenger, Rudolf; Kunze, Heinrich; Nothen, Karl; Appel, Hansgunter; and Wingler, Frank, to Bayer Aktiengesellschaft. Process for the production of spontaneously cross-linking highly reactive power lacquer binders. 3,741,272, Cl. 159-2.00e
Ulrich, Henri: *See*—
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National Aeronautics and Space Administration with respect to an invention of; Administrator:
Wood, Rex C. Apparatus for sampling particulates in gases. 3,741,001, Cl. 73-28.000.
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Nelson, Norman A., 3,741,990.
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Urbanek, Karel; and Kerswill, Edson G., to Randex, Inc. Sputtering system and target electrode construction for use therewith. 3,741,886, Cl. 204-298.000.
Urbutis, Algimantas P.; Schenk, Bernard H.; Risany, Joseph J.; and Marbach, Walter V., to Union Carbide Corporation. Method of marking shirred tubing. 3,741,779, Cl. 99-176.000.
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Van Leeuwen, Marion. Nibble detecting light for fishing poles. 3,740,887, Cl. 43-17.500.
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Van Paesschen, August Jean; Timmerman, Daniel Maurice; Van Hoof, Albert Emiel; Roosen, Raymond Albert; and Verbrugghe, Roland Gaston. Imbibition anionic dye image mordanted with N-hetero homopolymer. 3,741,768, Cl. 96-114.000.
Van Rooijen, Jan, to U.S. Philips Corporation. Potentiometer having a transport screw and diamond shaped contact spring. 3,742,421, Cl. 338-180.000.
Van Roojen, Jan, to Ingersoll Milling Machine Company, The. Fluid flow regulator for hydrostatic bearing pads. 3,741,231, Cl. 137-101.000.
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Vankoughnett, Allan Leroy; and Wyslouzil, Walter, to Canadian Patents and Development Limited. Tuning means in a microwave heating apparatus. 3,742,394, Cl. 333-17.000.
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Vehrs, Roger Keith. Viscous liquid dispenser. 3,741,439, Cl. 222-103.000.
Veley, Carl, to Permeator Corporation. Method of consolidating sand formations. 3,741,308, Cl. 166-292.000.
Velez, Phillip G. Wall-switch-mounted extension operator for toggle switch. 3,742,172, Cl. 200-172.000.
Velsicol Chemical Corporation: *See—*
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Veltman, Herbert: *See—*
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Dyer, Kermit W.; Handley, John V.; and Smith, Judson D., 3,741,619.
Shah, Rajendra P., 3,741,362.
Venot, Jean V., to Logan, Jonathan. Yarn package doffing apparatus and method. 3,741,490, Cl. 242-18.00a.
Verbeke, Henry, to APL Corporation. Cash box. 3,741,464, Cl. 232-15.000.
Verbiscar, Anthony J. Carbamate esters of physiologically active PH enenthylamines. 3,742,022, Cl. 260-471.00c.
Verbrugghe, Roland Gaston: *See—*
Van Paesschen, August Jean; Timmerman, Daniel Maurice; Van Hoof, Albert Emiel; Roosen, Raymond Albert; and Verbrugghe, Roland Gaston, 3,741,768.
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Villari, Frank K., to Kendall Company, The. Integral edge structure for urine collection bags. 3,740,770, Cl. 4-110.000.
Vincent, James Henry, to American Standard, Inc. Electrostatic precipitator. 3,740,927, Cl. 55-123.000.
VioBin Corporation: *See—*
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Viosca, Felix Jerome: *See—*
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Visinsky, Walter L. Aerial platform's safety control. 3,741,337, Cl. 182-148.000.
Visk, Francis A., to United States of America, Navy. Demolition firing device. 3,741,124, Cl. 102-70.20r.
Vofsi, David; and Asscher, Meir, to Products Chimiques Pechiney-Saint Gobain. Production of chlorinated cotelomers. 3,742,019, Cl. 260-465.700.
Vogel, Christian: *See—*
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Volinskie, Robert: *See—*
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Volkrodt, Wolfgang, to Siemens Aktiengesellschaft. Individual drive for textile machine spinning spindle. 3,742,268, Cl. 310-68.000.
Von Bredow, Hans D., to Big Drum, Inc. Method for assembling confection-serving containers of the push-up type. 3,740,821, Cl. 29-407.000.
Von Voros, Geza, to Optogram, Inc. Electro-optical digital position indicator. 3,742,488, Cl. 340-347.0ad.
Voplex Corporation: *See—*
Bentley, Ralph C.; and Burroughs, James R., 3,741,433.
Vos, Thomas H., to General Motors Corporation. Occupant restraint system. 3,741,580, Cl. 280-150.0ab.
Voyce, Terence Edward, to Bofors (Gt. Britain) Company Limited. Dragline bucket with skid link. 3,740,875, Cl. 37-115.000.
Vreeland, Walling D., Jr. Finger mounted needle assembly with manifold. 3,741,211, Cl. 128-221.000.
Waag, Ake, to Mo Och Domsjo Aktiebolag. Process for preparing spray dried detergent compositions. 3,741,913, Cl. 252-544.000.
Wacker-Chemie G.m.b.H.: *See—*
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Wade, Kenneth C.; and Adcock, D. L., said D. L. Adcock assor. to said Wade, Kenneth C. Control valve. 3,741,182, Cl. 123-104.0fg.
Wagner, Edmond M., to Jade Controls, Inc. Thermocouple structures. 3,741,816, Cl. 136-228.000.
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Wald, Herbert: *See—*
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Walker, Jack, to Texas Instruments, Incorporated. Silica deposition utilizing multiple torches. 3,741,796, Cl. 117-105.200.
Wall, Robert M., to Thiokol Chemical Corporation. Stabilized propellant compositions and methods for their preparation. 3,741,830, Cl. 149-19.000.
Wallace, Grover L.; Ward, Thomas D.; and Johnson, Paul R., to Harsco Corporation. Tertiary filter. 3,741,390, Cl. 210-80.000.
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Walraven, Laurentius Dominicus Johanna Margaretha; and Hoogenboom, Hendericus Gerardus. Tube bending process. 3,740,991, Cl. 72-342.000.
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Walsh, Edward N., to Stauffer Chemical Company. Hydrocyalkylcarbamylalkylphosphonates. 3,742,095, Cl. 260-943.000.
Walters, Blaine F.; Stutzman, William E.; and Fink, Ray S. Stitching machine for renewing pneumatic tires. 3,741,848, Cl. 156-421.000.
Walton, Hyman, to United Kingdom Atomic Energy Authority. Shaft movement/differential pressure measuring apparatus embodying capacitive transducers. 3,742,347, Cl. 324-61.00r.
Walz, Heinrich; and Bloom, Ray A., to Timken Company, The. Method for adding manganese alloying member to steel. 3,741,753, Cl. 75-129.000.
Wandel, Kurt. Reinforced corrugated board member. 3,741,859, Cl. 161-137.000.
Wandel, Oscar A.; and Dorney, Thomas H., to Fastener Corporation. Fastener driving tool. 3,741,455, Cl. 227-8.000.
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Wantage, Terence Colclough; and Brookes, Ronald, to Esso Research and Engineering Company. Preparation of alkyl or aralkyl esters of dithiophosphoric acid or derivatives thereof by transesterification. 3,742,099, Cl. 260-982.000.
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Ward, Walter H., to South African Farm Implement Manufacturers, Limited. Seed dispenser having spring biased seed selectors. 3,741,437, Cl. 221-219.000.
Wasem, Hans: *See—*
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Wasemann, William A., to Westinghouse Electric Corporation. Self-contained door safety switch with manually disabled latch. 3,742,162, Cl. 200-61.620.
Wason, Cameron Bernard, to Texas Instruments, Incorporated. Threshold extension phase modulated feedback receiver. 3,742,361, Cl. 325-346.000.
Watanabe, Hisashi: *See—*
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Watkin, Theodore: *See—*
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Watkin, Theodore, to Watkin, Theodore, Friedman, Maurice W. and Friedman, Alfred S. Method for clipping folded articles of clothing and the like. 3,740,823, Cl. 29-429.000.
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Weaver, Charles B.: *See—*
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Webb, William T. Load discharge control system. 3,741,608, Cl. 298-17.00s.
Weber, Jacques: *See—*
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Weber, Richard H.; and Chestnut, Benjamin F., to Mallory, P. R., & Co., Inc. Shaft locking device for a timer. 3,741,019, Cl. 74-3.500.
Weedon, Gene C.; and Little, Edwin D., to Allied Chemical Corporation. Antistatic fiber containing high molecular weight tris(b-hydroxyalkyl)-isocyanurate-alkylene oxide adducts. 3,741,966, Cl. 260-248.0ns.
Weeks, Lloyd E.; and Reynolds, John H., to Monsanto Company. Preparation of immobilized enzymes. 3,741,871, Cl. 195-63.000.
Weglin, Walter, to Jerobee Industries, Inc. Method of making accurate reproduction. 3,741,764, Cl. 96-63.000.
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Weingartner, Bernhard; and Fidi, Werner, to AKG Akustische u. Kino-Gerate G.m.b.H. Arrangement for damping torsional oscillations induced in a helical spring, particularly in artificial reverberation devices. 3,742,140, Cl. 179-1.00j.
Weinkamer, William A.: *See—*
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Weisbecker, Joseph A. Board game construction. 3,741,545, Cl. 273-131.00b.
Weissenfels, Franz; and Junger, Hans, to Dynamit Nobel Aktiengesellschaft. Manufacture of thermal shock resistant foams. 3,741,920, Cl. 260-2.5fp.
Weissman, Bernard. Jacketed dental anchor. 3,740,851, Cl. 32-15.000.
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Weller, David Reis, to Bell Telephone Laboratories, Incorporated. Isolating power supply for communication loop. 3,742,450, Cl. 340-147.00r.
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Wells, Robert R.; and Nelson, Donald O., to Staco-Switch, Inc. Modular light display panel. 3,742,446, Cl. 340-381.000.
Welton, Donald E.; and Hiland, John R., to North American Rockwell Corporation. Momentum exchange throttling injector. 3,740,946, Cl. 60-204.000.
Wentz, John L., to Westinghouse Electric Corporation. Communication. 3,741,626, Cl. 350-150.000.
Werner, Per Gunnar. Resilient hinging device for chairs and the like. 3,740,792, Cl. 16-180.000.
Werth, Elmer D.; Sipe, Nelson E.; and Pearce, Ronald A., to Coors Container Company, mesne. Container with closure tab and pressure release tab on closure tab. 3,741,432, Cl. 220-44.000.
Wesseler, Bernhard. Device for the production of intermediate selvages in fabric webs. 3,741,256, Cl. 139-54.000.
West, Benjamin W. Block and vent valve. 3,741,245, Cl. 137-596.180.
Western Electric Company, Inc.: *See—*
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White, David Walter James. Pulse train method and apparatus for locating and identifying conductors in a cable. 3,742,350, Cl. 324-66.000.
White, Jack Mort, to Sybron Corporation. Self-grounding mechanical span adjustment. 3,741,028, Cl. 74-409.000.
White, Quentin M.: *See—*
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Whitecar, Alten E., to Smith Kline & French Laboratories. Slide-sleeve package. 3,741,387, Cl. 206-79.000.
Whitehouse, Hugh L., to Stanley Works, The. Power tool having stall torque calibrating unit. 3,740,999, Cl. 73-1.00c.
Whitehurst, Marcus G.: *See—*
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Whitney, Eugene C., to Westinghouse Electric Corporation. Vertical dynamoelectric machine with improved stator support means. 3,742,271, Cl. 310-157.000.
Whybro, Robert S. D.: *See—*
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Wikstrom, Stellan Brynolf; and Malmquist, Leo, to U.S. Philips Corporation. Microwave oven having synchronously rotatable reflectors. 3,742,177, Cl. 219-10.550.
Wilhelm, Gary. Firearm. 3,740,884, Cl. 42-17.000.
Wilke, David J.; and Kraus, James R., to Pennsylvania Wire Rope Corporation. Vehicle emergency brake actuating mechanism. 3,741,033, Cl. 74-512.000.
Wilkinson, Ernest James, to Communications Satellite Corporation. Dual frequency dual polarized antenna feed with arbitrary alignment of transmit and receive polarization. 3,742,506, Cl. 343-176.000.
Wilkinson Sword Limited: *See—*
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Willaman, Ernest R. Trailer hitch. 3,741,587, Cl. 280-406.00a.
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Williams, Fred D., to Hydril Company. Pipe protector. 3,741,252, Cl. 138-110.000.
Williams, George J. Window alarm particularly useful with metal windows. 3,742,479, Cl. 340-274.000.
Williams, Gerald H., to Evans Products Company. Trolley system for freight bracing bulkhead assemblies. 3,741,127, Cl. 105-376.000.
Williams, Harold R. Film dryer. 3,740,866, Cl. 34-58.000.
Williams, Ralph P.; and Louthen, Rector P., to Phillips Petroleum Company. Metal tarnish removers. 3,741,834, Cl. 252-542.000.
Williams, Sylvester V., 15% to Andrus, Elwin L. Apparatus for continuously teeming and solidifying virgin fluid metals. 3,741,152, Cl. 118-405.000.
Williams, Willie V. Method of splicing synthetic thermoplastic carpet yarn ends. 3,741,836, Cl. 156-158.000.
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Willis, Donald Henry, to PPG Industries, Inc. Video amplifiers. 3,742,376, Cl. 330-21.000.
Wilson, Anthony Ian, to Teleflex Limited. Vehicle seats, especially aircraft seats. 3,741,513, Cl. 248-429.000.
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Wilson, Frank. Golf target. 3,741,549, Cl. 273-181.00a.
Wilson, Jesse C.; Borel, Melvin J.; and Weaver, Charles B., to Texas Instruments, Incorporated. Color infrared detecting set. 3,742,124, Cl. 178-5.20r.
Windsor, Meredith M.; and Heller, Ronald D., to D-D-D Engineering & Service Corporation. Wire terminating apparatus. 3,741,261, Cl. 140-1.000.
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Winkler, Friedrich; and Zanner, Johann, to Agfa-Gevaert Aktiengesellschaft. Magazine for storage of cassettes containing convoluted motion picture film. 3,741,375, Cl. 206-1.00r.
Winn, Fred M., Jr., to Dow Chemical Company, The. Mixing apparatus. 3,741,533, Cl. 259-4.000.
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Wojcik, David S., to Owens-Illinois, Inc. Sustainer voltage generators for driving gaseous discharge display panels. 3,742,294, Cl. 315-169.0tv.
Wold, Robert A.; and Higgins, Anthony P., to Raychem Corporation. Method and means for secondary closure. 3,741,422, Cl. 215-38.00a.
Wolf, Robert L.; and McGann, Rodney, to Texaco Inc. Fuel cooled ram air reaction propulsion engine. 3,740,949, Cl. 60-267.000.
Wolff, Charles S.; and Jeansonne, Michael J., to Amoco Production Company. Selective completion using triple wrap screen. 3,741,300, Cl. 166-184.000.
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Wolff, Norman C., Jr., to Affiliated Hospital Products, Inc. Surface projectile game apparatus having removable and reversible game-playing panel. 3,741,544, Cl. 273-126.00r.
Wolstencroft, Michael John, to Du Pont of Canada Limited. Process for fabricating card clothing drums. 3,740,809, Cl. 29-148.40d.
Wolters, Jakob, to Maschinen- und Bohregeratefabrik Alfred Wirth & Co., KG. Drilling rig with drill rod magazine. 3,741,322, Cl. 175-52.000.
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Wood, William; Griffiths, Mary; and Sellers, John, to French, Thomas, & Sons Limited. Curtain heading tape. 3,741,259, Cl. 139-387.000.
Woodward Governor Company: *See—*
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Wrobel, Raymond J.; and Rendek, Robert B., to Armour and Company. Treating process to improve separability of bacon slices. 3,741,777, Cl. 99-159.000.
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CLASSIFICATION OF PATENTS

ISSUED JUNE 26, 1973

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4 3,741,159
5 3,741,160
14.36 3,741,161
51.13 3,741,162
54 3,741,163

CLASS 122
6.5 3,741,165
23 3,741,166
32 3,741,164
3,741,167
136R 3,741,168
367C 3,741,169
510 3,741,174

CLASS 123
8.27 3,741,170
32EA 3,741,171
41.27 3,741,172
41.57 3,741,173
48A 3,741,175
90.12 3,741,176
97B 3,741,177
3,741,178
104FG 3,741,182
119A 3,741,179
122A 3,741,180
139AW 3,741,181
148E 3,741,183
3,741,184
3,741,185
149R 3,741,186
179K 3,741,187
198DB 3,741,188

CLASS 124
11R 3,741,189
22 3,741,190
278 3,741,191

CLASS 125
21 3,741,192
23T 3,741,193

CLASS 126
85B 3,741,194
362 3,741,195

CLASS 128
1R 3,741,196
2A 3,741,198
2F 3,741,197
2.05M 3,741,199
66 3,741,201
71 3,741,200
76B 3,741,202
82 3,741,203
92B 3,741,205
92R 3,741,204
132D 3,741,206
133 3,741,207
145.6 3,741,208
145.8 3,741,209
153 3,741,210
221 3,741,211
287 3,741,212
3,741,213
303R 3,741,214
305 3,741,215
346 3,741,216
349 3,741,217
373 3,741,218
417 3,741,219

CLASS 131
70 3,741,220
210 3,741,221

CLASS 133
8C 3,741,222

CLASS 134
3 3,741,804
4 3,741,805
24 3,741,807
58R 3,741,808
171 3,741,806
191 3,741,223

CLASS 135
1R 3,741,224
5.2 3,741,225
62 3,741,226

CLASS 136
86A 3,741,809
3,741,810
90 3,741,811
107 3,741,812
3,741,813
111 3,741,814
166 3,741,815
228 3,741,816

CLASS 137
1 3,741,227
66 3,741,229
101 3,741,231
102 3,741,232
117 3,741,233
202 3,741,234
269 3,741,236
332 3,741,237
344 3,741,238
408 3,741,239
483 3,741,240
504 3,741,241
3,741,242
528 3,741,243
554 3,741,244
596.18 3,741,245
614.2 3,741,228
624.11 3,741,246
625.66 3,741,247
627 3,741,248
629 3,741,249
805 3,741,230

CLASS 138
30 3,741,250
96 3,741,251
110 3,741,252
137 3,741,253

CLASS 139
2 3,741,254
46 3,741,255
54 3,741,256
66R 3,741,257
125 3,741,258
387A 3,741,259
420R 3,741,260

CLASS 140
1 3,741,261
92.2 3,741,262

CLASS 141
59 3,741,263
383 3,741,264

CLASS 145
3.61 3,741,265

CLASS 147
6.3 3,741,818

CLASS 148
1.6 3,741,817
6.15Z 3,741,747
11.5R 3,741,819
12.9 3,741,820
13.1 3,741,821
36 3,741,822
103 3,741,823
127 3,741,824
159 3,741,827
171 3,741,825
178 3,741,826

CLASS 149
19 3,741,828
3,741,829
3,741,830
41 3,741,831
109 3,741,832
3,741,833

CLASS 151
21B 3,741,266

CLASS 152
175 3,741,268
208 3,741,269
210 3,741,270
427 3,741,267

CLASS 156
14 3,741,835
158 3,741,836
171 3,741,837
173 3,741,838
174 3,741,839
197 3,741,840
213 3,741,842
229 3,741,841
244 3,741,843
3,741,844
273 3,741,845
360 3,741,846
384 3,741,847
421 3,741,848
500 3,741,849
515 3,741,850

CLASS 157
1.1 3,741,271

CLASS 159
2E 3,741,272
4R 3,741,273

CLASS 160
23R 3,741,274
58 3,741,275

CLASS 161
2 3,741,851
37 3,741,852
41 3,741,853
67 3,741,854
88 3,741,856
91 3,741,855
127 3,741,857
137 3,741,859
162 3,741,860
166 3,741,861
173 3,741,862
185 3,741,858
247 3,741,803

CLASS 162
4 3,741,863
158 Re.27,687
246 3,741,864
317 3,741,865
374 3,741,866

CLASS 164
72 3,741,276
82 3,741,277
114 3,741,278
3,741,279
250 3,741,280
253 3,741,281
282 3,741,282
287 3,741,283
347 3,741,284

CLASS 165
1 3,741,285
4 3,741,286
8 3,741,287
9 3,741,288
32 3,741,289
48 3,741,290
55 3,741,291
105 3,741,292
166 3,741,293

CLASS 166
.5 3,741,294
.6 3,741,295
3,741,296
3,741,297
89 3,741,298
105 3,741,299
117.5 3,741,300
184 3,741,301
191 3,741,302
208 3,741,303
214 3,741,304
216 3,741,305
250 3,741,306
252 3,741,307
273 3,741,308
292

CLASS 169
2R 3,741,309
31R 3,741,310

CLASS 172
45 3,741,311
448 3,741,312

CLASS 173
12 3,741,313
93.6 3,741,314
105 3,741,315
107 3,741,316
109 3,741,317
152 3,741,318
163 3,741,319

CLASS 174
34 3,742,116
50.064 3,742,117
52S 3,742,118
65R 3,742,119
68.5 3,742,120
72B 3,742,121
94R 3,742,122
102R 3,742,363
138F 3,742,123

CLASS 175
6 3,741,320
40 3,741,321
52 3,741,322
246 3,741,323

CLASS 176
36S 3,741,867
78 3,741,868

CLASS 177
3 3,741,324
32 3,741,325
59 3,741,326
163 3,741,327
210 3,741,328

CLASS 178
5.2R 3,742,124
3,742,125
5.4CD 3,742,127
3,742,129
5.4ML 3,742,128
5.4SD 3,742,130
5.4R 3,742,126
5.6 3,742,131
6 3,742,133
6.6DD 3,742,134
6.6P 3,742,132
6.8 3,742,135
3,742,136
17C 3,742,137
68 3,742,138
69.5R 3,742,139

CLASS 179
1SA 3,742,143
3,742,146
1J 3,742,140
2A 3,742,141
3,742,142
15AL 3,742,144
15AT 3,742,147
15BA 3,742,145
3,742,148
15TS 3,742,149
81A 3,742,153
82 3,742,150
99 3,742,151
100.2E Re.27,685
111E 3,742,152
119A 3,742,156
175.3 3,742,154
3,742,155

CLASS 180
9.44 3,741,331
89R 3,741,329
103 3,741,330
108 3,741,332

CLASS 181
.5NP 3,741,334
.5H 3,741,333
33K 3,741,335
54 3,741,336

CLASS 182
148 3,741,337
155 3,741,338
186 3,741,339
196 3,741,340
228 3,741,341

CLASS 184
6.4 3,741,342
11A 3,741,343
69 3,741,344

CLASS 186
1R 3,741,345

CLASS 187
9 3,741,346
29R 3,741,347
3,741,348
95 3,741,351

CLASS 188
42 3,741,349
70 3,741,352
72.6 3,741,350
171 3,741,353
345 3,741,354

CLASS 190
49 3,741,355

CLASS 192
3.61 3,741,356
12D 3,741,357
53F 3,741,358
58B 3,741,359
87.19 3,741,360
110B 3,741,361

CLASS 194
1H 3,741,362
100A 3,741,363

CLASS 195
36R 3,741,869
51F 3,741,870
63 3,741,871
66A 3,741,872
68 3,741,873
102 3,741,874
103.5R 3,741,875
3,741,876
127 3,741,877

CLASS 197
151 3,741,364
238 3,741,235

CLASS 198
27 3,741,365
33AA 3,741,367
33AB 3,741,366
37 3,741,368
38 3,741,369
3,741,371
131 3,741,370
140 3,741,372
209 3,741,373
221 3,741,374

CLASS 200
5A 3,742,157
11G 3,742,158
38R 3,742,159
3,742,160
44 3,742,161
61.45R 3,742,163
61.62 3,742,162
83SA 3,742,166
83R 3,742,164
83Y 3,742,165
86.5 3,742,167
148E 3,742,169
150B 3,742,168
157 3,742,364
166C 3,742,170
168G 3,742,171
172A 3,742,172
535P 3,742,045

CLASS 202
173 3,741,878
236 3,741,879

CLASS 204
15 3,741,880
30 3,741,881
42 3,741,882
195F 3,741,884
195M 3,741,883
288 3,741,885
298 3,741,886

CLASS 206
1R 3,741,375
5A 3,741,377
5R 3,741,376
15.1E 3,741,378
45.14 3,741,380
46AP 3,741,379
47A 3,741,381
3,741,383
47R 3,741,382
56AA 3,741,384
56AB 3,741,385
62R 3,741,386
79 3,741,387

CLASS 208
191 3,741,887
3,741,888
3,741,889

CLASS 210
40 3,741,890
54 3,741,891
65 3,741,892
67 3,741,388
77 3,741,389
80 3,741,390
123 3,741,391
180 3,741,392
195 3,741,393
282 3,741,394
321 3,741,395
335 3,741,396
474 3,741,398
497 3,741,397
516 3,741,400
519 3,741,401
525 3,741,399

CLASS 211
104 3,741,402
135 3,741,403
148 3,741,404
177 3,741,405

CLASS 213
22 3,741,406

CLASS 214
1BC 3,741,409
1QG 3,741,408
1D 3,741,407
8.5K 3,741,410
10.5R 3,741,411
16.1ED 3,741,412
41 3,741,413
44R 3,741,414
138C 3,741,415
146 3,742,185
314 3,741,417
512 3,741,418
730 3,741,419
750 3,741,420

CLASS 215
9 3,741,421
38A 3,741,422
40 3,741,423
43R 3,741,424

CLASS 217
12 3,741,425

CLASS 219
10.41 3,742,173
10.49 3,742,174
3,742,175
10.55 3,742,176
3,742,177
10.77 3,742,178
3,742,179
10.81 3,742,180
76 3,741,426
85 3,742,181
121EB 3,742,365
121LM 3,742,182
121L 3,742,183
126 3,742,184
160 3,742,186
240 3,742,187
323 3,742,188
367 3,742,189
389 3,742,190
471 3,742,191
553 3,742,192

CLASS 220
13 3,741,427
18 3,741,428
3,741,429
38 3,741,430
43P 3,741,431
44 3,741,432
55.7 3,741,433
65 3,741,434
93 3,741,435

CLASS 221
156 3,741,436
219 3,741,437

CLASS 222
96 3,741,438
100 Re.27,689
103 3,741,439
132 3,741,440
135 3,741,441
142 3,741,442
145 3,741,443
309 3,741,444
397 3,741,445
402.24 3,741,446
517 3,741,447

CLASS 223
66 3,741,448
91 3,741,449

CLASS 224
42.42R 3,741,450
48R Re.27,688

CLASS 225
26 3,742,359
100 3,741,451
103 3,741,452
145 3,741,458

CLASS 226
7 3,741,453
179 3,741,454

CLASS 227
3 3,741,459
8 3,741,455

CLASS 228
5 3,741,460
41 3,741,456
44 3,741,457

CLASS 229
2.5 3,741,461
16R 3,741,462
17R 3,741,463

CLASS 232
15 3,741,464

CLASS 233
7 3,741,465
38 3,741,466
41 3,741,467

CLASS 234
90 3,741,469

CLASS 235
60TK 3,741,470
61.9R 3,741,471
62F 3,742,193
92EV 3,742,195
92PC 3,742,194
92C 3,741,472
95R 3,741,473
150.1 3,741,474
151.3 3,742,196
3,742,232
152 3,742,197
154 3,742,198
3,742,199
3,742,200
156 3,742,201
175 3,741,475
183 3,742,202

CLASS 236
87 3,741,476
93 3,741,477

CLASS 237
73 3,741,478

CLASS 238
14 3,741,479

CLASS 239
2R 3,741,480
102 3,741,481
296 3,741,482
400 3,741,483
424 3,741,484

CLASS 240
4 3,742,203
7.1H 3,742,205
7.1R 3,742,204
10.1 3,742,206
10.68 3,742,207
51.12 3,742,208
73BJ 3,742,209
108R 3,742,210
152 3,742,211

CLASS 241
39 3,741,485
95 3,741,486
223 3,741,487

CLASS 242
18PW 3,741,488
18A 3,741,490
18 3,741,489
18.1 3,741,491
20 3,741,492
84.1R 3,741,493
107.4 3,741,494
3,741,495
3,741,496
192 3,741,497
199 3,741,498
201 3,741,499

CLASS 244
1SA 3,741,500
3.13 3,741,502
3.14 3,741,501
103S 3,741,503
137R 3,741,504
145 3,741,505
3,741,506

CLASS 245
1.5 3,741,507

CLASS 248
119R 3,741,508
171 3,741,509
229 3,741,510
371 3,741,511
399 3,741,512
412 3,741,514
429 3,741,513

CLASS 249
26 3,741,515
216 3,741,516

CLASS 250
41.9DS 3,742,212
41.9ME 3,742,228
41.9TF 3,742,213
49AE 3,742,214
65R 3,742,229
3,742,230
83R 3,742,215
83.3D 3,742,216
83.3H 3,742,235
3,742,238
83.3R 3,742,217
84 3,742,219
106S 3,742,366
202 3,742,220
206 3,742,221
209 3,742,222
211J 3,742,223
213VT 3,742,224
219D 3,742,225
231R 3,742,233
235 3,742,234
279 3,742,226
282 3,742,227
321 3,742,236
324 3,742,237
338 3,742,231
349 3,742,239
372 3,742,240
381 3,742,218
391 3,742,367

CLASS 251
5 3,741,517
44 3,741,518
111 3,741,519
144 3,741,520
149.7 3,741,521
159 3,741,522
315 3,741,523

CLASS 252
8 3,741,893
8.5C 3,741,894
8.55D 3,741,895
25 3,741,897
42.7 3,741,896
62 3,741,898
62.9 3,741,899
89 3,741,900
3,741,901
90 3,741,902
95 3,741,903
99 3,741,904
107 3,741,952
142 3,741,905
182 3,741,906
301.2R 3,741,907
330 3,741,908
401 3,741,909
437 3,741,910
527 3,741,911
529 3,741,912
542 3,741,834
544 3,741,913
545 3,741,914
555 3,741,915

CLASS 254
122 3,741,524
139 3,741,525
139.1 3,741,526
168 3,741,527
190R 3,741,528

CLASS 256
26 3,741,529

CLASS 259
4 3,741,533
67 3,741,530
96 3,741,531
149 3,741,532

CLASS 260
2EP 3,741,916
2.5AH 3,741,917
2.5AN 3,741,918
2.5AR 3,741,919
2.5AS 3,741,921
2.5FP 3,741,920
17R 3,741,922
23AR 3,741,923
27R 3,741,924
28.5R 3,741,925
29.6M 3,741,926
33.6AQ 3,741,927
37EP 3,741,928
40R 3,741,929
41C 3,741,930
41.5R 3,741,931
46.5E 3,741,932
47CB 3,741,933
47EC 3,741,934
65 3,741,935
75S 3,741,936
76 3,741,937
77.5AA 3,741,938
78UA 3,741,942
78L 3,741,939
78.3R 3,741,941
78.5T 3,741,940
3,741,943
79 3,741,944
79.3R 3,741,945
91.5 3,741,947
112.5 3,741,948
3,741,949
117 3,741,950
140 3,741,951
193 3,741,953
205 3,741,954
210.5 3,741,955
3,741,956
239BD 3,741,957
239.1 3,741,958
3,741,959
3,741,960
243C 3,741,962
3,741,963
3,741,965
243R 3,741,961
3,741,964
248NS 3,741,966
250A 3,741,967
251P 3,741,968
251Q 3,741,969
279R 3,741,970
281 3,741,971
293.53 3,741,972
293.54 3,741,973
293.83 3,741,974
295AM 3,741,975
295.5R 3,741,976
307A 3,741,977
309.5 3,741,978
310C 3,741,979
326.1 3,741,980
326.15 3,741,982
326.5FM 3,741,981
327B 3,741,983
332.2C 3,741,984
340.2 3,741,985
340.9 3,741,986
3,741,987
3,741,988
343.6 3,741,989
345.3 3,741,990
346.2M 3,741,991
3,741,992
346.8 3,741,993
364 3,741,994
377 3,741,995
397.2 3,741,996
397.4 3,741,997
401 3,741,998
404 3,741,999
404.5 3,742,000
412.8 3,742,001
439R 3,742,002
448.02N 3,742,003
448.2N 3,742,004
455A 3,742,005
3,742,006
3,742,007
455B 3,742,008
456A 3,742,009
463 3,742,010
3,742,011
465B 3,742,014
465D 3,742,012
465.4 3,742,018
465.5R 3,742,013
3,742,015
465.6 3,742,016
3,742,017
465.7 3,742,019
465.8R 3,742,020
468.5 3,742,021
471C 3,742,022
471R 3,742,023
3,742,033
475B 3,742,025
3,742,026
3,742,027
475P 3,742,024
479R 3,742,028
481R 3,742,029
3,742,030
3,742,031
3,742,032
482C 3,742,035
482R 3,742,034
3,742,036
488CD 3,742,037
488H 3,742,038
497A 3,742,039
501.12 3,742,041
501.21 3,742,040
516 3,742,042
521A 3,742,043
534M 3,742,044
544Y 3,742,047
562A 3,742,048
563D 3,742,049
564C 3,742,056
564R 3,742,050
566B 3,742,052
566D 3,742,051
566F 3,742,053
3,742,054
570.5CA 3,742,055
583EE 3,742,058
583P 3,742,057
584R 3,742,059
585A 3,742,060
592 3,742,046
3,742,062
594 3,742,063
606.5F 3,742,064
609A 3,742,066
609R 3,742,065
613A 3,742,067
615R 3,742,068
3,742,069
618F 3,742,070
621R 3,742,071
645 3,742,072
650R 3,742,073
651F 3,742,074
652.5P 3,742,075
666LY 3,742,076
668B 3,742,077
668D 3,742,078
669R 3,742,079
680B 3,742,080
683.62 3,742,081
683.9 3,742,082
824R 3,742,083
827 3,742,084
3,742,085
836 3,742,086
860 3,742,087
873 3,742,088
3,742,089
875G 3,741,946
876R 3,742,090
879 3,742,091
880R 3,742,092
893 3,742,093
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DESIGN PATENTS

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49 : 227,454

PLANT PATENTS

39 : 3,367
3,368
3,369

U. S. GOVERNMENT PRINTING OFFICE : O - 1973

U. S. DEPARTMENT OF COMMERCE

Frederick B. Dent, *Secretary*

PATENT OFFICE

Robert Gottschalk, *Commissioner*